

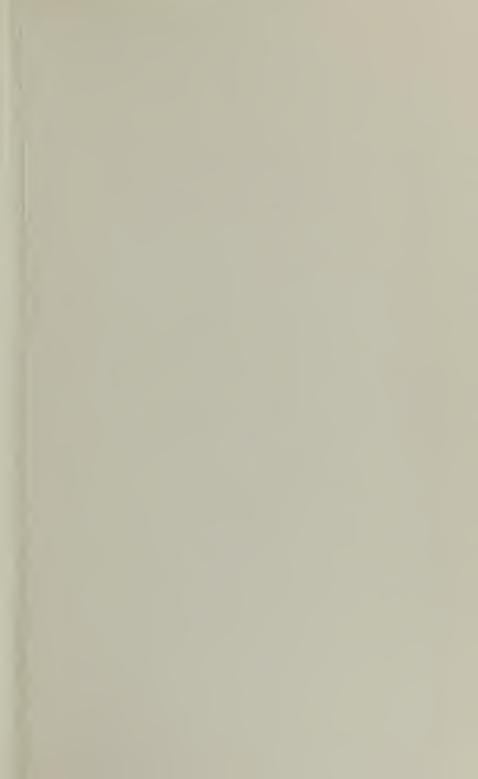
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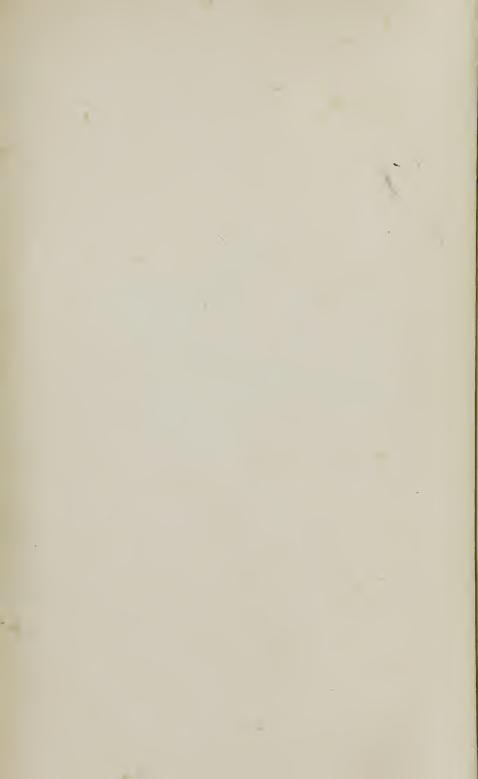


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ONTHE

DISEASES OF CHILDREN.



A

PRACTICAL TREATISE

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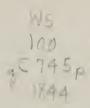
DISEASES OF CHILDREN.

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PREFACE.

THE leading object of the author, in the preparation of the present treatise, was to present a full and connected view of the actual state of pathology and therapeutics, in reference, especially, to the diseases that most usually occur between birth and puberty.

That the condition of the organization during this period, produces a very considerable modification in the character, progress, and termination of the morbid actions that take place in the several tissues, and in the phenomena to which they give rise, as well as in the operation of remedial agents generally, was perceived by many of the older physicians, by whom several elaborate treatises were devoted especially to the diseases incident to infancy and childhood.

Who indeed does not perceive, remarks Faust, that the maladies of infants and children form a class, in some measure apart from those of the adult; that they have their peculiar language; run often a very different course; and require, for their cure, a particular mode of treatment. Nor will this be wondered at, if attention be given to the condition of the body and its functions, in these early periods of existence—when nearly all the organs are but imperfectly formed—some of them being still inactive, while others, so to speak, are yet to be organized. From the first stages of infancy, there is truly much activity of life, employed in the building up and perfecting of every portion of the system; but this very excess of vitality, inviteth the occurrence of disease, and giveth to it, when it does occur, a peculiar character and direction.

To the investigation of the diseases of the earlier stages of existence, much attention has been recently given; and the numerous facts that have been adduced, within a short period, in relation to their character, the organs and tissues in which they are ordinarily seated, their diagnostic phenomena, and usual course and termination, have thrown not a little light upon much that was heretofore obscure, in regard to their pathology, while they have tended to render the treatment of them, generally speaking, more simple, certain, and successful.

By the result of the labours of contemporaneous observers, the pathology and therapeutics of infancy and childhood, have, in fact, been made to assume an entirely new aspect; in consequence of which, nearly all the former treatises devoted to their consideration, have become, in a great measure, obsolete; or, at best, very inefficient and unsafe guides for the student and young practitioner.

Several very valuable publications on the diseases of children, have, it is true, made their appearance within a few years past, comprising many of the more recent observations. They are, nevertheless, all of them, deficient in many important particulars—especially, in reference to those forms of infantile disease most commonly met with in the United States—while few, if any of them, do full justice to the practical facts that have been contributed by American physicians. There is, consequently, still ample room left,—if there be not an absolute demand,—for a new and more comprehensive treatise.

It is to this character that the present work lays claim; and the author feels some confidence in the belief, that it will be found, in many points of view, much better adapted to the wants of the general class of practitioners in this country, than any of those which have preceded it—excellent as some of them unquestionably are.

While he has appropriated to his use every important fact that he has found recorded in the works of others, having a direct bearing upon either of the subjects of which he treats, and the numerous valuable observations—pathological as well as practical—dispersed throughout the pages of the medical journals of Europe and

America,—which are, in some measure, lost to the student and busy practitioner, for the want of being arranged and carefully collated with each other—the author has, nevertheless, in the preparation of the present treatise, followed chiefly the results of his own observations and experience, acquired during a long and somewhat extensive practice, and under circumstances peculiarly well adapted for the clinical study of the diseases of early life.

He has made use of the labours, and adopted the opinions of others, only when he has found them to correspond with, or to be confirmatory of, the results of his own observations and inquiries;—not unfrequently, he has attributed to others, facts and deductions, familiar to, and taught by him, many years before they were announced by those to whom they are credited.

In the few instances, in which, from the high professional standing and authoritative character of the individuals from whom they emenate, he has considered it proper to notice pathological views, or plans of treatment, the accuracy of which he has had no opportunity of testing, or which are in discordance with his own observations and experience, the fact is invariably stated, so that the credit or responsibility may rest with their respective authors. And, in all cases, in which an opposition of opinion, upon any important point, exists between medical authorities of equal weight, he has always adopted those views, which comport the nearest with his own observations; presenting, at the same time, when it is demanded by the importance of the subject under consideration, a fair exposition of the views of others in relation to it.

Every species of hypothetical reasoning has, as much as possible, been avoided. The author has endeavoured throughout the work, to confine himself to a simple statement of pathological facts, and plain therapeutical directions—his chief object being to render it, what its title imports it to be—A Practical Treatise on the Diseases of Children.

In the description of the several maladies, he has endeavoured to

delineate, with clearness and precision, the character, and the most usual order of succession of their respective phenomena, and the modifications and changes these undergo, in the different grades and stages of the same disease.—Indicating, as far as was practicable, those which are essential and diagnostic, and such as are merely accidental, and often entirely absent.

It has been objected to writers on the diseases of children, of no very remote date, that they often confound morbid affections of a very dissimilar character—as well in regard to their location as to their leading symptoms; while phenomena dependent upon the same form of disordered action, and seated in the same organs and tissues, are ereeted by them into separate and independent diseases. That the objection is, to a certain extent, well founded, there can be no doubt. How far the author of the present treatise has been led into a similar error, must be left for others to determine; he trusts, that his endeavour to avoid it has been attended with success. It is possible, however, that future and more extended investigations, may show that some of the diseases which are now considered as independent of each other, are the result, merely, of different grades or stages of the same morbid action, and that phonomena, referred to the same lesion, depend, in fact, upon those of a very dissimilar character and location.

In describing the pathological anatomy of the different affections, the author has endeavoured to be as full and accurate as the materials in his possession would permit. Notwithstanding the many important contributions that have, of late years, been made to this department of his subject, much still remains to be done, in order to render it a certain basis, in all cases, for deductions in relation to the seat and character of the morbid actions that ordinarily occur in the earlier stages of existence. Whenever no authority is given for the statements presented under this head, the author is himself responsible for their accuracy—they being the results of his own investigations.

In regard to the practical directions for the treatment of the several diseases, the author has almost exclusively depended upon the results of his personal experience. To notice every remedy that has been proposed, at different periods, and by different practitioners -the recommendation of which, is founded, perhaps, upon the result of its exhibition in two, three, or at the furthest, half a dozen cases, would have been a means, certainly, of filling up his pages, and might have gained for him the credit of extensive research—but would have contributed but little towards the instruction of his readers. He has preferred to present only those remedies and plans of treatment which he has found, from actual observation made at the bed-side of the patient, to be best adapted to relieve or to remove the several forms of disease of which he treats; and which he is convinced will be the least likely to disappoint the expectations of the practitioner, when promptly and judiciously administered. He has not failed, however, to notice every remedy and plan of treatment, which comes to us with the recommendation of practitioners of unquestionable authority, even although he may not have had an opportunity of testing its efficacy.

In his selection of remedial agents, he has always studied simplicity—being convinced that, in the treatment of the diseases of children especially, a few simple but efficient remedies, are, in every point of view, preferable to a multiplicity—all calculated, perhaps, to produce similar effects—even when the efficacy of each may have been fully tested. But, as it occasionally happens, that in certain cases, a change of means, even without any change in our immediate indication, will be productive of beneficial results, those remedies have been pointed out, that may, under particular circumstances, be advantageously substituted for each other.

Great attention has been paid to describe the proper hygienic management of the several affections treated of. This is a subject, which, in the generality of the treatises on the diseases of children, has been too much overlooked. In reference to all diseases, it is of very great importance, but in none is it more so, than in those

occurring during infancy and the earlier periods of childhood. In these, hygienic management is often sufficient alone to effect a cure, while it constitutes, invariably, an essential adjuvant to the therapeutic measures employed, and by which the successful operation of these is invariably, and often very greatly, promoted.

It will be found, that in the present work, certain remedies and formulæ are repeatedly directed, that are not in common use among the practitioners of this country, in the treatment, at least, of the same class of diseases. These have been, almost invariably, borrowed from the German practitioners; and it is upon his long acquaintance with their effects, that the author's recommendation of them is founded. Many of them are old remedies and prescriptions, that well deserve to be revived.

It has been correctly remarked, that there is a danger, in the general fondness exhibited for new remedies, that those which have been already tried, and with the operation of which we are well acquainted, should become abandoned for others, whose only claims to a preference is their novelty. It should be recollected, however, that in therapeutics change is not always improvement; and that our want of success in the cure of certain diseases, does not so much result from the absence of efficient means, as in our ignorance of the circumstances and stages of morbid action under which those we possess are to be applied. We are indebted, certainly, to modern pharmacy for many remedial agents of great power; but this forms no good reason for overlooking our older remedies that have been found to possess equal, if not superior, efficacy. (Muhll.)

The endeavour of the author has been, to render the present treatise, throughout, a useful guide to the student, in the acquisition of a knowledge of the character, seat, causes, prevention, and treatment of the several diseases of infancy and childhood; and he feels persuaded, that should his fellow-practitioners be inclined to consult its pages, they may derive from them some few facts and practical hints, not altogether unworthy of their notice.

Philadelphia, December, 1843.

CONTENTS.

PART FIRST.

CHAPTER I.

THE HYGIENIC MANAGEMENT OF CHI	LDREN	•		
1. Air. Temperature, 2. Cleanliness. Bathing, 3. Clothing, 4. Food, 5. Sleep, 6. Exercise, 7. Moral Treatment,	-		-	20 24 27 30 43 49 57
CHAPTER II.				
On the Peculiarities of Organization and I Infancy and childhood.	UNCTI	ON, DUR	ING	
1. Infancy, Organization, Functions, 2. Childhood, - Organization, Functions, -	•	-	•	67 ib. 74 81 ib. 82
CHAPTER III.				
PATHOLOGY OF INFANCY AND CHILDH	00D.			85
CHAPTER IV.				
Semeiology of the Diseases of Infancy and	Сни	DHOOD.		
1. Of the Countenance, 2. Of the Gestures, 3. The Phenomena during Sleep, 4. The Cry, 5. Respiration, 6. The Tongue and Mouth, 7. Of the Surface, 8. The Breath, 9. Discharges by Vomiting and Sto	- - - pool,		-	104 107 109 110 112 113 114 117 118 120
11. The Bones,	-		•	121

PART SECOND.

SECTION I.

DISEASES OF THE DIGESTIVE ORGANS.

CHAPTER I.

DISEASES OF THE MOUTH.

1. Stomatitis. Inflammation of the Mouth, - Erythematic Stomatitis, - 2. Erythematic Stomatitis, with curd-like Exudations, 3. Follicular Stomatitis, - 4. Ulcerative Stomatitis, - 5. Gengivitis. Inflammation of the Gums, - 6. Gangrene of the Mouth, - 7. Difficult Dentition, - 8. Tongue-tie, -	125 ib 126 130 136 138 139 149 154
CHAPTER II.	
Diseases of the Throat.	
 Tonsillitis, Pseudo-membranous Inflammation of the Throat, Gangrene of the Throat, Parotitis. Inflammation of the Parotids. Mumps, Angina Externa, 	155 157 161 168 170
CHAPTER III.	
Œsophagitis,	172
CHAPTER IV. Diseases of the Stomach.	
1. Indigestion, 2. Gastritis. Inflammation of the Stomach,	174 184
CHAPTER V.	
Diseases of the Intestines.	
1. Congenital Mal-formations, 2. Enteralgia. Colic,	190 193

	CONTENTS.		xiii
	3. Diarrhœa, 4. Cholera Infantum, 5. Prolapsus Ani, Polypus of the rectum, 6. Invagination of the Intestines, 7. Intestinal Worms, 8. Enteritis. Inflammation of the Small Intestines. Ileitis, 9. Colitis. Inflammation of the Large Intestines. Dysentery, 10. Peritonitis. Inflammation of the Peritoneum, 11. The Remittent or Gastric Fever of Infancy, SECTION II.		198 217 224 227 ib. 229 240 245 248 252
D 18	SEASES OF THE RESPIRATORY ORGANS.		
	1. Asphyxia, 2. Coryza, 3. Bronchitis, 4. Bronchial Congestion, 5. Pneumonia, Atelectasis Pulmonum, 6. Pleuritis, 7. Tracheitis. Croup, 8. Laryngismus Stridulous. Spasmodic Croup, 9. Pertussis. Hooping-cough, 10. Foreign Bodies in the Larynx and Trachea,	-	262 268 271 278 281 289 290 294 311 318 333
	SECTION III.		
	DISEASES OF THE NERVOUS SYSTEM.		
	 Hypertrophy of the Brain, Cerebral Hyperæmia and Hæmorrhage, Convulsions, Acute Meningitis, Sub-acute Meningitis, Chronic Hydrocephalus, 		336 341 352 367 379
	6. Chorea, SECTION IV. DISEASES OF THE SKIN.		395
	CHAPTER I.		
	ERUPTIVE FEVERS. EXANTHEMATA.		
	1. Measles, 2. Scarlet Fever. Scarlatina, Inflammatory Scarlatina, Scarlatina Anginosa,		404 414 415 416

Congestive Scariatina,			43
3. Roseola. Scarlet Rash,			438
4. Variola. Small-pox,			458
5. Vaccination,	-		479
6. Modified Small-pox. Varioloid, -		-	478
7. Varicella. Chicken-pox,			4/1
CITA DICTION II			
CHAPTER II.			
CUTANEOUS ERUPTIONS.			
m) 4i4i -		
Eruptions occurring previous to Weaning, and during I	Jenuuo.	a.	APP
1. Strophulus,		•	478
2. Prurigo,	-		480
3. Crusta Lactea,		-	481
4. Impetigo, -	-		483
Eruptions chiefly connected with Gastro-enteric Irritation	on.		
5. Erythema,		-	485
6. Eczema,			486
7. Urticaria. Nettle Rash,		•	487
8. Erysipelas,	-		490
9. Phlegmonous Tumors,			495
10. Herpes, -			500
11. Lepra,			503
		_	504
12. Psoriasis, -	•		506
13. Follicular Tumors,			
14. Follicular Wart,	60		ib.
15. Sycosis,		-	507
16. Porrigo, -	-		508
17. Induration of the Skin,		-	513
18. Jaundice. Icterus Infantalis,	-		517
Eruptions connected with Languid Cutaneous Action.			
19. Pityriasis,		-	520
20. Ichthyosis,			522
21. Alopecia, -			523
22. Ecthyma. Rupia, -	-		524
23. Pemphygus,			527
24. Purpura, -			529
From Organic Disease.			0.00
25. Cyanosis. Morbus Cœruleanus, -			534
From Infection, independent of Visceral Disease.			002
			538
26. Psora. Scabies. Itch,	•		
27. Syphilitic Eruptions,		-	541
From Local Inflammation.			
28. Paronychia,	-		54 5
From Congenital Causes.			
29. Nævus,		•	548
SECULON A			
SECTION V.			
DISEASES OF THE NUTRITIVE FUNCTION	N.		
Scrophula, -			552
Scrophulous Inflammation of the Lymphatic Glands,			558
"Opthalmia, -			559
			000

CONTENTS.

Scrophulous Otitis, -	-	562
" Discharges from the Vagina, -		564
Disease of the Bones, -	-	565
White Swelling, -		567
Hip Disease,	-	568 570
Disease of the Spine, Tubercular Depositions,	_	571
Treatment of Scrophula,		574
Treatment of Scrophulous Opthalmia,		581
" Otitis,		585
" Discharges from the Vagina,	-	586
" Diseases of the Bones. Rickets,		587
" White Swelling, -	-	589
" Hip Disease,		590
Disease of the Spine,	-	591 593
Tubercular Depositions,	_	594
Purulent Opthalmia.		00%
SECTION VI.		
10 0		
DISEASES OF THE URINARY ORGANS.		
1. Dysuria. Painful and Difficult Micturition,		601
2. Anuria. Suppression of Urine,		606
3. Ischuria. Retention of Urine,		608
4. Enurisis. Incontinency of Urine,		610
5. Diabetes,	-	615
SECTION VII.		
N M O L A O LI I L A A O		
CONGENITAL AFFECTIONS, AND ACCIDENTS OCCURRING, MOST GEN	E-	
RALLY, WITHIN THE MONTH.		
a a t mid II I D 1'		619
1. Spina Bifida. Hydro Rachis,	_	623
2. Club-Foot. Talipes,		625
3. Hare Lip, 4. Ruptures. Herniæ,	-	626
Arrest of the Testicle, -		631
5. Vaginal Hæmorrhage,	-	632
6. Inflammation and Ulceration of the Navel,		ib.
7. Intumescence and Inflammation of the Breasts,	-	634
8. Hæmorrhage from the Navel,		636
9. Œdema of the Prepuce,	-	637
10. Hydrocele,		638 640
11. Fractures,	•	641
12. Cohesion of the Labia and Nymphæ, - 13. Burns and Scalds, -		642
10. Durits and Scalus,		7.7



THE DISEASES OF CHILDREN.

CHAPTER I.

THE HYGIENIC MANAGEMENT OF CHILDREN.

"When we reflect upon the many painful and dangerous maladies to the attacks of which children, from the earliest period of their existence, are liable, and by which so large a proportion of them are annually destroyed, and consider, also, that in many, perhaps in the majority of cases, these attacks might easily be avoided by a proper attention to those external agents, to the influence of which the infant is subjected, from the moment of its birth, and which, while they are essential to its existence, become, when counteracted or mismanaged, the cause of nearly all its infirmities and diseases; the physician can scarcely be considered as fulfilling all his duties, when he neglects to point out, and urge the administration of the means by which the occurrence of disease may be prevented, as well as those, which, when disease is already present, are adapted to remove it." (Faust.)

These remarks made upwards of a century since, by one whose writings have been consigned to unmerited oblivion, are still substantially true. A vast amount of the disease and suffering that occur in early life, is unquestionably produced by errors committed in regard to diet, clothing and exercise,—by impure air, unwholesome dwellings, imprudent exposure, and a general neglect of physical and moral education. The proper management of infancy and childhood is, even now, but imperfectly understood, and many erroneous opinions in relation to it, giving birth to practices the most pernicious, are still entertained, even by physicians. A general view of the more important particulars connected with the subject would seem, therefore, to be a proper and necessary introduction to the consideration of the pathology and treatment of the maladies incident to the early periods of life.

1,-Air. Temperature.

The first want of the new born infant is a free supply of air - and this want continues to recur during every moment of its future existence. But it is not only necessary that the infant should be supplied with a sufficient amount of air to carry on the function of respiration; it is equally necessary that the air it breathes be perfectly pure; an impure and stagnant atmosphere being even more deleterious during infancy and childhood, than in more advanced life. From this cause alone, according to the statement of Dr. Clarke, in the year 1782, out of 7650 infants, born in the lying-in-hospital of Dublin, 2944 were destroyed within the first two weeks after their birth. They nearly all died in convulsions-many of them foamed at the mouth-their thumbs were drawn into the palms of their hands—their jaws were locked—and their faces swollen and of a bluish tint, as though they had been strangled. So soon as proper measures were taken, at the suggestion of Dr. Clarke, to ensure a free circulation of pure air throughout the wards of the hospital, the dreadful mortality that had previously occurred, among the infants inhabiting them, was almost immediately suspended. But even when not immediately productive of any violent or fatal train of symptoms, by gradually impairing the powers of life, a vitiated and stagnant atmosphere, produces a general unhealthy condition of the organs—prevents their due development, and lays the foundation for maladies, that are always difficult, and often impossible to remove.

Children that have been, from any cause, confined in small, unclean, badly ventilated or overcrowded apartments, almost invariably exhibit the deleterious influence of an impure and stagnant air, in their pallid countenances, flaccid muscles, and emaciated limbs; their impaired digestion—their panting respiration upon any trifling exertion—their stunted growth and general sickly air—and in their predisposition to some of the most dangerous affections of the lungs, stomach, brain and other organs. There is no doubt, that in these cases, the injurious effects of a vitiated atmosphere, are, in some degree, augmented by the want of proper and sufficient exercise; it would be in vain, however, to attempt to counteract them by any amount of exercise, so long as the little sufferers are debarred from enjoying the pure

fresh air.

The importance, therefore, of selecting as a nursery the largest, and most lofty room in the house, and of taking every precaution to insure, at all times, the purity of its air, by free but cautious ventilation—by the strictest cleanliness of the apartment and its furniture, and by removing from it every possible source of vitiation, should be frequently and forcibly urged upon parents—and every neglect of the means adapted to preserve the infant from the influence of an impure and vitiated atmosphere, should receive a prompt rebuke on the part of the physician in attendance.

Among the most usual causes, independent of a neglect of cleanli-

ness and ventilation, by which the purity of the air in rooms occupied by young children, is liable to be impaired are, the smoke of lamps and of wood fires—the gasses produced by the combustion of stone or charcoal—the washing, drying, and ironing of the infant's garments—the cooking of various articles of food—the smoke of tobacco, and those domestic processes by which the atmosphere is robbed of its oxygen, or loaded with effluvia of any kind; all which should be carefully guarded against. The impropriety of exposing infants to the infected air of crowded and confined apartments need scarcely

be pointed out.

As soon as a child is sufficiently old, it should be carried daily, for a few hours, into the open air, whenever the state of the weather, and the temperature of the season will permit. By no other means can we so effectually secure to it the full enjoyment of pure, fresh air—and contribute so essentially to ensure its health and promote its sprightliness. "The open air," Struve with great justness remarks, "is particularly grateful to the feelings of infants. When they have been accustomed to it for a few times, they evince, even at a very early age, a strong desire to return to it. When unable to walk, they point anxiously to the door, and make efforts to approach and open it. When they can scarcely crawl, they instinctively advance towards that part of the room from which they have a prospect of escaping. Often their cries can be arrested in no other way than by

carrying them into the free open air."

Not unfrequently, even when there is nothing to object to in the condition of the atmosphere which the child respires within doors, and notwithstanding the precaution is taken to carry it abroad, at short intervals, into the open air without, it is deprived of the full benefit of a pure atmosphere by various practices originating in ignorance, prejudice or misconception. Thus, during the many hours passed by infants in sleep, by covering their faces carefully with the bedclothes; by carefully enclosing the cradle or cot with a closely drawn curtain; or when they are taken abroad enveloping the entire head in a hood or with a shawl; or carrying them carefully inclosed beneath the shawl or cloak of its mother or nurse; they are made to breathe a confined atmosphere, which their own respiration, and the exhalations from their bodies tend constantly to render impure and in the highest degree noxious. We have, in several instances, seen convulsions and symptoms of decided asphyxia produced by these absurd and indefensible practices.

A healthy and robust infant may be carried daily into the open air, in dry weather, and when the temperature of the season is sufficiently mild, as soon as it is two or three weeks old. Even during the winter season, days will frequently occur when a robust infant, of a more advanced age, may be exposed for a short time to the open air, provided its body be protected with a sufficient amount of clothing, not only without danger but with positive advantage to its

health.

From the period when a child becomes able to walk alone, it should be allowed to pass many hours, every day, in the open air. The robust, fully developed and active limbs, and the ruddy and sprightly complexion exhibited by children who pass much of their time in the open air, form a striking contrast with the pallid countenances, the general listlessness, the fragile frames, and the inactive disposition of

those who are confined nearly the whole day within doors.

The temperature of the air to which infants and young children are exposed, is equally important with its purity. It has been shown by Dr. W. F. Edwards, that in the young of the human species, as well as of the warm blooded animals generally, the power of generating heat is but imperfectly developed, and that, consequently, not only is the temperature of their bodies less, but their capability of resisting the depressing influence of cold is far below what it is in after life—we can readily perceive, therefore, that exposure to air of too low a temperature must be peculiarly prejudicial to young infants. And although the power of producing heat goes on increasing until adult age, still, young children, and especially those of a feeble constitution, will suffer discomfort and have their health impaired by a degree of cold, that would be tolerated, with impunity, by those who are older and more robust. According to Drs. Milne, Edwards, and Villerme of Paris, and Dr. Trevisano, of Castel Franco in Italy—and the accuracy of these gentlemen's statements is fully confirmed by Drs. Lombard, of Geneva, and Quetelet of Brussels, and by subsequent observers—the greatest mortality among children, from birth to the age of three months, occurs during the season of greatest cold, and consequently, we find that the mortality among children is greater in northern than in southern climates; and in the northern climates, during winter than during the other seasons of the year. Allowance, however, must be made for particular causes, or occasional visitations of epidemic diseases:—thus, in most of our larger cities, in the middle and southern states, the excessive heat of the summer, when conjoined with causes which prevent free ventilation, and tend otherwise to diminish the purity of the air, produces, annually, a very great mortality among children under two years of age.

From the foregoing facts, it must be evident, that to maintain a sufficient degree of warmth in the air of the apartments occupied by children, is indispensable, not only to their comfort, but for the preservation of their health and lives. It will not do, however, for parents or nurses to judge of the temperature required for the well being of the infant by their own sensations—for what may be sufficiently comfortable to them may be destructive to the latter—nor should they suppose, that because no alarming symptoms supervene immediately after the exposure of children to cold, their constitution does not suffer—uneasiness, at first slight, is by a repetition of the cause, almost invariably converted into serious disease. Thus, inflammation of the throat, air passages or lungs, more or less severe, or a predisposition to incurable affections of these and other parts, is, in infants and young chil-

dren, often the result of exposure to a degree of cold, from which

dangerous consequences is the least suspected.

Infants, and children of a feeble constitution, or in whom, from any cause, the powers of life have been depressed, should especially be guarded from exposure to the external air, during cold or damp weather. Important as the enjoyment of the fresh air is to the health and comfort of infants, the practice of carrying them abroad in cold weather, under the idea of confirming their strength or rendering them hardy, is not less cruel than absurd. A child of sufficient age and vigour to enable its system to react promptly under the depressing influence of the cold, and, by an increased evolution of heat, to maintain its temperature, may, it is true, sustain with impunity, or even derive advantage from, exposure for a short period to a moderate degree of cold—but, in all others, so far from an increase of strength and vigour, or the ability to endure, without injury, sudden vicissitudes of temperature, being acquired by their exposure to cold, either in or out of doors, the very opposite effect will ensue—if an attack of severe disease be not immediately produced.

While urging the importance of a due degree of external heat, to the comfort and health of infants, and the necessity of carefully protecting them from exposure to even slight degrees of cold, we would not wish to be understood as recommending that the air of the rooms they occupy should be kept at a high degree of temperature. To subject children of any age constantly to a heated atmosphere, is highly improper—from the excessive stimulation thus produced—and the profuse perspiration in which their bodies are almost constantly bathed, especially during sleep—they soon become relaxed and enfeebled—their nervous system, at the same time, acquires an undue degree of irritability; every trifling vicissitude of temperature causes them to suffer, and they become liable to attacks of severe disease

from the slightest causes.

A temperature of from 66° to 70° of Fahrenheit, is that best adapted to the nursery—a less degree of heat would not be prudent for very young children, and even those more advanced in age will scarcely tolerate, with perfect impunity, a much lower temperature. It is to be recollected, that notwithstanding a robust and healthy child, when a few years old, will suffer no injury from a dry and cold atmosphere, whilst engaged in active exercise—even out of doors—yet, when at rest, within doors, its health and comfort will be best promoted by the air of the room being sufficiently warm to prevent the least sense of chilliness.

The injurious consequences we have pointed out, as resulting from constant exposure to too high a degree of artificial heat, will indicate the propriety of protecting children, as much as possible, from the intense heat which usually prevails during the summer months, especially in the cities of our southern and middle states—by a free ventilation of the apartments they occupy—and by frequent exposure to the fresh air, in open and shady situations. The deleterious effects of the heated and confined air of a large city upon the health of children

may, in a great measure, be counteracted by these means, as well as by daily rides into the surrounding country, or by exensions upon the water; the means for which, in most of our larger cities, is placed within the reach of all, by the numerous steam-boats that depart for short trips, at almost every hour.

2.—Cleanliness. Bathing.

The important functions of the skin, and the intimate relations which exist between it and every other part of the body, point out the necessity of guarding it from whatever is calculated to impede its free and healthful action. More especially should the utmost attention be paid to preserve it, by frequent ablutions, from the influence of foreign impurities, as well as from an accumulation of its own excretions. Whenever this is neglected, disgusting, painful, and obstinate cutaneous eruptions are liable to be produced, or the foundation is laid for derangement of function or serious disease of one or other of the internal organs. At no period of life is injury more liable to be produced by a neglect of cleanliness, than during infancy—at no period, therefore, are repeated ablutions of more importance. Immediately after birth, the body of the infant requires to be carefully washed, and the same operation must be performed daily to ensure its comfort, and to preserve it from disease.

The skin of the new born infant is more or less covered with a white unctious matter; the vernix caseosa; whatever office this may perform in fætal life, it is unnecessary, or even injurious, to allow it to remain for any length of time after birth. It may be very readily removed by washing the skin with warm water and a soft cloth or sponge. Dewees and others recommend, in order to facilitate the removal of the vernix caseosa, to "smear every part of the child with fine hog's lard," and then to wash with soap and water. Dr. Eberle recommends smearing the body with the yolk of eggs, when, he remarks, "simple warm water will be sufficient to cleanse the surface thoroughly." Notwithstanding the high authorities by which these practices are recommended, we doubt their necessity, and are far from being convinced of their propriety. When a sufficient amount of water, of a proper temperature, is employed, and sufficient care is taken in the process of washing, we have seldom seen much difficulty experienced in clearing the skin of its caseous coating.

In washing a new born infant, no degree of friction should be used for fear of irritating or abraiding the tender skin; and notwithstanding it is important to remove, as soon as possible, the caseous matter from the folds of the joints, where it is generally most abundant, yet if this cannot be readily done at the first washing, what remains, should be left, and at the second washing, with ordinary care, the skin may be freed from every portion of it.

The washing being completed with as little delay as possible, the surface, particularly the folds of the joints, the neck, the groin, &c.,

should be thoroughly dried with a soft napkin, and the child dressed

as quickly as possible.

We have directed the infant to be washed in warm water. This is not a matter of indifference; to plunge the body of a new born child in cold water, and keep it there until the process of washing is completed, is to subject it to unnecessary suffering—if not to endanger its life; and when the same process is pursued, day after day, although the robust and vigourous may survive it, and even acquire additional strength and vigour from the dangerous ordeal through which they have been made to pass, the generality of infants will suffer from it serious discomfort, if not permanent injury; while the feeble and debilitated will inevitably perish under it. The absurd notion, so generally entertained, that the cold bath is adapted in all cases, to augment the strength and invigorate the powers of life, and which has induced so many to view it as an important agent in the physical education of infancy and childhood, has been fully exposed by the experiments of Dr. Edwards and others. By these it has been shown that the direct effects of cold water, when applied to the surface, is to depress the strength and vigour of the system; and that this depressing effect is always in a direct ratio with the feebleness or exhaustion of the individual subjected to its influence. And when we add to this, that by the same experiments it has been proved, that the power of generating heat, and consequently, the ability to support a diminution of their temperature, is at its minimum at birth, and goes on gradually augmenting as the child approaches maturity, we can readily understand the folly and danger of applying cold water to the skin of a young infant, and the necessity of the water in which it is washed being always sufficiently warm to prevent the production of the least degree of chilliness. As the infant increases in age, the temperature of the water may be gradually reduced—watching, however, its effects, the more closely, the nearer it is reduced to a state of coldness. If its application to the surface be followed by a glow all over the body, and a sense of comfort in the child, it is not too cold; but should it occasion chilliness, evident languor, and depression, it must be immediately exchanged for water of a higher temperature. As a general rule, however, during no period of childhood should the washing be performed in perfectly cold water. Tepid water is better adapted to remove impurities from the surface, and to preserve the skin in a healthy condition, while injury to health is less liable to result from its use. As it is important that the entire surface of the body should be subjected to daily ablution—for without this personal cleanliness cannot be maintained—we are in favour, even from the period of birth, of applying the water in which the child is washed in the form of a bath. It is much better to immerse the body of the new born babe into a large basin of warm water, its head and shoulders being supported by the hand and arm of the nurse, than to subject its tender body to the handling and exposure which is necessary when it is washed upon the lap. By immersing it in a sufficient quantity of

warm water, the washing, also, can be more promptly and effectually performed than by the too common practice of sopping portion after portion of the surface with a wet rag or sponge—while the infant is spared the danger of becoming chilled, which can scarcely be done by any other plan. Nothing should be added to the water—with proper attention an infant may be kept perfectly clean without the use of soap. When, however, from any cause soap is required, the finest white kind should be employed. The practice so generally pursued of bathing the head of infants, at the first and subsequent dressings, with some spirituous liquor, should be discountenanced; it does no possible good, but by irritating the scalp, cannot fail to cause

considerable smarting, or even more serious mischief.

During the entire period of infancy, the whole surface of the body should be washed in warm or tepid water every morning—and during the day, such portions of it as may become soiled by the natural evacuations or from any other cause. Nor should the maintenance of personal cleanliness, by similar means, be neglected after the child has passed beyond the term of infancy. The daily use of the bath, and more frequent ablutions of the face, hands and feet, should still be enjoined, and any neglect in regard to them prevented by a careful surveillance on the part of the parents or guardians. Frequent bathing in tepid water, independently of its removing from the surface every source of impurity, benefits the health of the child by promoting the functions of the skin, and encouraging the free and regular circulation of the blood through its numerous vessels, securing thus the regular growth and full development of every portion of the body.

"I consider bathing," remarks Struve, "as the grand arcanum of supporting health, on which account, during infancy, it ought to be regarded as one of those sacred maternal duties, the performance of

which should on no account be neglected a single day."

The time during which the child should remain in the bath will vary according to its age. For the first month after birth the immersion should not continue longer than three or four minutes—the time being gradually prolonged as the child advances in age—continuance in the bath beyond ten or fifteen minutes is, however, unnecessary and scarcely prudent at any period of childhood. Children should not be permitted to enter the bath when in a state of profuse

perspiration, nor for some hours after a meal.

Intimately connected with the subject of cleanliness is a proper attention to the hair. In early infancy, all that is necessary is to subject the head, in common with every other part of the surface of the body, to daily ablutions in warm water; as the child increases in age, and the hair begins to grow, a little soap may be added to the water with which the head is washed, and the hair should be repeatedly but gently cleansed with a soft brush. This will prevent the greasy matter which exudes from the scalp, accumulating and forming a dry black crust—disgusting in its appearance, and liable to occasion ulcerations of the skin beneath it of a most obstinate and painful charac-

ter. Many parents are opposed to frequently washing the head of an infant, from a supposition that it will render it liable to take cold and be otherwise prejudicial to health; no such fears, however, need be entertained—the child's health will be much more endangered by neglecting to keep its head scrupulously clean than by the too frequent application to it of water of a proper temperature. A soft brush should always be used instead of a comb, for cleansing and smoothing the hair of young children, there being less danger of the brush

scratching or unduly irritating the skin.

During the entire period of infancy and childhood the hair should be kept short. Nothing is more common than to see a luxuriant head of hair accompanied in children with paleness of complexion, weakness of the eyes, and frequent complaints of headache; independently of this, eruptions and ulcerations of the scalp are more apt to occur, than when the hair is kept short and thin. The degree of heat, also, which a profuse growth of hair produces in the head, invites to the brain an undue amount of blood, and augments its liability to those diseases to which at this period of life it is always more or less predisposed.

"The trouble, also, of keeping long hair sufficiently clean, and the length of time necessary for this purpose, is often a cause of much ill humour, and many cross words, which would be better avoided, between children and their attendants. Mothers, whose vanity may be alarmed, lest constantly cutting the hair until the eighth or ninth year should make that of their daughters' coarse, may be assured that they have no cause for this apprehension, if the hair be kept constantly brushed. I have never seen softer, better hair, than on girls who have had it kept short, like that of school boys, until they were

in their tenth year."

3.—Clothing.

"The essentials in the clothing of children," remarks a sensible writer of the last century, "are lightness, simplicity and looseness. By its being as light as is consistent with due warmth, it will neither encumber the child, nor cause any waste of its powers; in consequence of its simplicity, it will be readily and easily put on, so as to prevent many cries and tears; while by its looseness it will leave full room for the growth and the due and regular expansion of the entire frame; a matter of infinite importance for the securing of health and comfort in after life." (Willis.)

The texture and amount of clothing, during infancy and childhood, should be such as to preserve every portion of the body of a sufficient and equable warmth—neither allowing it, on the one hand, to experience the slightest sensation of chilliness, nor on the other, unnecessarily augmenting its heat. The younger the infant the warmer should it be clothed, and the more care is to be taken to protect every part of its surface by an appropriate covering. Older children, especially

in the variable climate peculiar to our northern, middle and western states, require their clothing to be adapted in its material and amount to the average state of the weather. It should be neither too flimsy and light in summer, nor too warm and oppressive in winter; a medium covering being that ordinarily worn throughout the year, with appropriate additions, adapted to changes in the weather, to the prevailing temperature of the season, or to particular circumstances

of exposure.

For the under garments of children flannel is indispensable during the autumnal, winter and spring months. Worn in contact with the skin flannel preserves, better than any other material, a moderate and equable warmth of the body, and more effectually protects it from the influence of sudden alternations in the temperature of the atmosphere. During the summer season, however, the flannel may be changed for muslin or cotton; the softer species of which, that which is neither of a very fine texture nor highly dressed, should be selected. Even in winter, when from any unusual sensibility of the surface, the contact of the flannel excites an irritation of the skin, or produces profuse perspiration, thick muslin may be substituted, or a soft muslin dress may be worn next to the body and over this a flannel garment.

The fushion of a child's clothing is a matter of perfect indifference if the material of which it is composed be sufficiently warm, and it be made perfectly loose, and to protect effectually every part of the body. To leave the neck, shoulders, and arms of a child nearly or quite bare, however warmly the rest of the body may be clad, is a sure means of endangering its comfort and health; violent attacks of croup, or bronchitis, or even inflammation of the lungs, are often induced by this irrational custom; and it is not improbable that the foundation of pulmonary consumption is often thus laid during childhood. It is an important precantion, therefore, to have the dress worn by children so constructed as to protect the neck, breast, and shoulders, and with sleeves long enough to reach to the wrists.

By having its garments of sufficient length, the lower extremities of an infant may be kept perfectly warm, especially, if in cool weather, the feet are covered with soft woollen socks; but when it becomes old enough to be carried abroad, or commences to walk, its legs and feet should be defended by soft woollen stockings which reach above the knees, but without garters, and by easy comfortable shoes, of some soft material with leather soles; the latter are indispensable whenever the child is placed upon the floor, to protect its feet from being injured by any sharp substance with which they may accidentally come in contact.

The head, even from birth, may be fully protected, under every degree of exposure to which it is proper to subject an infant, without the necessity of enveloping it day and night with a cap. When on the lap of the mother or nurse, if the room be of a proper temperature, a soft woollen shawl, thrown loosely around the infant's neck and shoulders, and brought up over its head so as to form a kind of hood,

will be sufficient to guard it from any accidental draft of cool air; when carried abroad, in cool weather, a similar covering will render any other than a thin, light and soft cap, unnecessary. Caps are objectionable by keeping the child's head too warm, and thus inviting to the brain an additional amount of blood, at a period when, from its soft texture and great vascularity, it is prone to inflammation from slight causes. The material of which the cap is composed, being generally lace or worked muslin, by the roughness or harshness of its surface is calculated to fret and irritate the delicate skin with which it is in contact, and if not productive of eruptions, cannot fail to occasion considerable uneasiness to the child. By covering and confining the ears, and compressing them against the sides of the head, the cap is apt also to occasion pains and inflammation of these organs, or a disgusting, sometimes dangerous, soreness and running behind them.

It is all important that every part of a child's clothing should be sufficiently loose to give perfect freedom to all its movements, and to prevent compression of any portion of the chest, loins or extremities; without this the muscles will fail to acquire their proper development and strength—the chest its full expansion, or the figure that uprightness and perfectness of form, upon which beauty and health so

intimately depend.

As a general rule, the clothes worn at night should be both lighter and looser than the day clothes. The additional warmth produced by the bed and its coverings renders unnecessary the same amount of garments as are required during the day, and would be liable, were no change in the clothing made, to overheat the body, or to exhaust it by causing profuse perspiration; while the least restraint or compression of the limbs, chest or abdomen renders the sleep disturbed—and by its impeding the free action of the heart and lungs, is liable to produce various uneasy sensations or even partial or general spasms. Every article of dress worn during the day should be changed on retiring to rest; this is demanded for the promotion of the comfort as well as the health of children; it allows the different portions of the clothing to be aired at short intervals, and prevents any injury that might result from the gaseous and vaporous exhalations given off by the skin, and imbibed to a greater or less extent by the clothes, being retained too long in contact with it.

For infants a simple long gown of flannel in cold, and of muslin in warm weather, made with wide sleeves covering the whole of the arms, is the most appropriate night dress. For older children, of both sexes, who are very apt in their sleep to thrust their arms and legs from beneath the bed clothes, it is better to make the night dress in the form of a jacket and long trousers, with feet; the whole being, however, in one piece, and secured, where it is left open behind to enable

it to be put off and on, with tapes.

Every article of clothing worn during infancy and childhood should be kept scrupulously clean, to which end it should be frequently changed. It is all important likewise that it be preserved as dry as possible. During the early period of infancy, especially, the under garments should be examined at short intervals, and if any one of them have become wet, it should be immediately removed and replaced by a dry and clean one. If this be neglected, the child is liable to become chilled, and its health to be endangered. We have known severe inflammation of the skin about the upper portion of the thighs and nates to be induced when a wet diaper has been allowed to remain on for too long a period.

For fastening and adjusting the clothes of young children, tapes should be substituted, as much as possible, for pins; painful punctures and scratches, from the points of the latter being brought in contact with the skin, in handling infants, or even by their own movements, are of daily occurrence, and we have numerous instances on record of more serious consequences resulting from the pins, accidentally

detached, becoming imbedded in the infant's flesh.

4.—Food.

The milk of the mother is the natural and only proper food for an infant. "Nature does not afford, nor can art supply any substitute." To it, therefore, should the child be entirely confined, whenever it is possible, until the process of dentition has made some progress. The difficulty of rearing an infant, when from any cause it is deprived of the maternal breast, or that of a healthy nurse, is pointed out by almost every writer that has treated on the subject of infantile hygiene. In the asylums for foundlings and young infants, where feeding by the hand, has been substituted for the natural nourishment, the mortality has been, invariably, the most appalling. Forty, fifty, sixty, and even as high as eighty and ninety per cent. of the infants being destroyed.—(Annales d'Hygiene, t. xix.) It is true, as Auvity very properly remarks, that, in the domestic nursery, and where the utmost care and attention is bestowed at every moment upon a single infant, feeding by the hand is far less destructive to life; under such circumstances robust and healthy children have certainly been reared entirely without the breast. Still the task is a difficult one, and against the few instances in which it succeeds, we must place the very many in which it entirely fails. "I am convinced," says Dr. Merriman, "that the attempt to bring up children by hand proves fatal, in London, to at least seven out of eight of these miserable sufferers; and this happens, whether the child has never taken the breast, or having been suckled for three or four weeks only, is then weaned. In the country, the mortality among dry-nursed children is not quite so great as in London, but it is abundantly greater than is generally imagined." When, therefore, from any cause, and the case is one of very rare occurrence, a mother is unable to suckle her infant, the breast of a proper nurse should be substituted.

The danger which attends every attempt to rear an infant by the

hand, as it is termed, is indeed now very generally recognized by mothers; the importance, however, of confining it entirely to the breast during the first months subsequent to birth, is still far from being understood; and it is forced, often, to partake daily of substances to the digestion of which the powers of the stomach during infancy are totally inadequate, or which are altogether unadapted to afford to it wholesome nutriment, under the absurd notion that some food, in addition to the mother's milk, is necessary to support its strength, and promote its growth. The beneficial effects of the natural food are, in this manner, in a great measure counteracted, while the child is subjected to many of the dangers resulting from dry nursing; the functions of the digestive organs become almost invariably deranged, and the child suffers more or less from flatulence, griping pains, and irregularity of the bowels; it becomes weak and emaciated, even if distressing spasms of the glottis, general convul-

sions, or still more serious disease be not induced.

As a general rule, subject to few exceptions, the mother's milk alone will afford adequate nourishment, while it is that best adapted to promote the proper and regular growth of the body, and to maintain the stomach and all the other organs in a state of health; circumstances may, however, occur under which it will be necessary and prudent, notwithstanding the child continues at the breast, to supply it with additional nourishment; thus, when the quantity of milk furnished by the mother is too small in quantity, although perfectly good in quality, in addition to the food it receives from the breast, the child may be supplied, at proper intervals, with a mixture of cow's milk and water, sweetened with loaf sugar. The milk should be taken fresh from a healthy cow, and if possible, always, from the same animal; because, as Dewees judiciously remarks, different cows feeding upon the same materials often give different qualities of milk, and the stomach, very generally, becomes reconciled more readily to any one certain quality, than to a mixture. The quantity of milk required for use should be mixed with nearly an equal quantity of warm water, and well sweetened with the best loaf sugar. Neither stale nor skimmed milk, nor that which has the slightest tendency to acidity should, on any consideration, be employed; nor should any greater quantity of the mixture be made than will be required for the child within a short period, lest it turn sour by standing. With this mixture the child should always be fed by means of a sucking bottle—such as is now supplied by all our apothecaries. The advantages of the bottle are, that the child draws from it its nourishment by precisely the same process as it does its natural food from the breast of its mother. In this manner it becomes mixed with the saliva previously to being swallowed, and the stomach is less apt to become over-distended by too much being taken at one time, as when the child is fed by means of a spoon.

The utmost care should be taken to preserve the sucking bottle and its tube perfectly clean and free from sourness. After each time it is

used, any portion of contents that remains should be poured out, and the bottle with its tube immediately well washed in hot water, and

again rinsed out with warm water when next used.

We have recommended diluted cow's milk sweetened with loaf sugar as being, under ordinary circumstances, the most appropriate aliment for an infant who may require nourishment in addition to its mother's milk. We believe it to be the best, also, during, at least, the first four or five months, when, from any cause, the child has to be brought up entirely by hand. It affords sufficient nutriment, in general agrees well with the stomach, and in most situations is readily obtained pure and fresh. The milk of the ass and mare, which in their composition certainly approach nearer to that of the human female than the milk of the cow or goat, is strongly recommended by many continental writers for the nourishment of infants, while a late writer, Carault, (Guide des Mères), gives the preference to rennet

whey and a decoction of malted barley.

The nearer the aliment that is given to an infant, in addition to, or as a substitute for its mother's milk, approaches in its qualities to the latter, the better. Scarcely any thing, in the form of food, could be devised so little adapted for nourishment, during the first months of existence, or more liable to produce derangement of the stomach and bowels, and injury to the infant's health generally, than the vile compounds of flour and milk, bread and water, or oatmeal and water, large quantities of which, under the names of pap, panada, and water gruel, were, until a very late period, forced down an infant's throat, under the absurd supposition, that this was necessary in order to promote its strength and vigour, and to save the mother from the too great exhaustion which, it was imagined, would ensue if the child was permitted to depend upon the breast for its entire nourishment. But as the powers of the infant's stomach are altogether inadequate to digest properly or entirely the articles of food thus forced upon it, gastric irritation, griping pains, disturbed sleep, fits of violent screaming, frequent watery discharges from the bowels, discoloration of the skin, and rapid emaciation are the usual consequences of their use; to relieve these, too often, the child is made to partake of an additional quantity of the same kind of food, or it is liberally supplied with some carminative or cordial, and thus the mischief is constantly increased until some severe or incurable disease is induced. "That the jaundice of infants is generally produced by dyspeptic irritation, I have not," says Eberle, "the slightest doubt, mucous irritation of the duodenum is well known to be an active and frequent source of this malady, and this affection is very rarely found to occur, in new born infants, without being proceeded by decided manifestations of irritation of the digestive organs. Let the child's stomach be once or twice filled during the twenty-four hours with gruel, or any of the ordinary preparations employed by nurses for this purpose, and the chances will probably be as ten to one, that acidity, vomiting, colic, griping and jaundice will supervene;"-" very vigorous and healthy infants,

it is true, often pass through the gastric irritation and distress, produced by improper nourishment soon after birth, without sustaining any permanent injury in health or constitutional infirmity. After four or five months of flatulency, griping, &c. the digestive powers gradually become inured to the impressions of the food, and a considerable degree of health and vigour is obtained. In many cases, however, the irritation which is thus kept up in the stomach and bowels, does not pass off in so favourable a manner. Jaundice, chronic and unmanageable diarrhæa, emaciation, slow fever, enlarged mesenteric glands, dropsy in the brain, scrofula, chronic affections of the liver, epilepsy, and other dangerous maladies, may, and not unfrequently do, result from this state of the alimentary canal, during infancy."

After dentition has made some progress, a portion of gum, barley or rice water may, with propriety, be added to the sweetened milk; or we may give, in addition to it, a little plain beef or mutton broth, or the juice of the same meats when not over-roasted, deprived, as much as possible, of fat. But as a variety of food is more apt to disagree with the stomach of the infant, than one simple article when well selected, in every instance in which the child appears to be well nourished, there should be no hurry in changing or adding to its diet, which, until several of its teeth have been cut, should consist, pretty

much, of the articles above-enumerated.

Whatever may be the food with which the child is nourished, whether it be solely the breast milk of the mother, or the mixture of cow's milk, water, and sugar, care should be taken that it be allowed to partake of it only in such quantities, and in such proportions, as are absolutely necessary to its proper nourishment. The stomach should never be over-loaded; nor should the process of digestion, which, though extremely rapid in the earlier periods of life, nevertheless requires a certain period for its perfect accomplishment, be interfered

with, by the too early introduction of more food.

In the early period of infancy, the rapidity with which the digestion is effected, requires the stomach to be supplied with food at very short intervals; but as the child increases in age, these intervals are gradually to be lengthened; so that, while at first it takes the breast almost every few hours, or even oftener, it subsequently requires it only three or four times in the course of the day and night. The rule to be observed in nursing or feeding an infant, is never to withhold from it the breast or bottle when it indicates a desire to partake of it, but, at the same time, not by any means to provoke it to partake of either when it exhibits no such desire. It is surprising, how very early, by a neglect of this rule, a morbid appetite may be created. It is too often the custom with mothers and nurses to take it for granted, that because a child cries, it must be hungry, and to force it, then, to take the breast; or when fretful from any cause to attempt to appease it by administering food.

No fixed rule can be laid down as to the number of times, or proper periods, at which an infant should partake of nourishment; the natural wants of its system ought alone to be consulted; and these

are made known, even in the youngest infant, by signs which the most superficial observer can scarcely mistake. By a little care, instead of having the child, when awake, constantly hanging at the breast, it may be taught to require it at regular periods; and the danger of over-distending its stomach with milk will then be, in a great measure, avoided. It is not uncommon for an infant to be accustomed to lie all night at the breast; a practice from which injury may result, not only by inducing the child to overload its stomach, but by interrupting its sleep, and causing it to breathe for many hours

a confined, heated and impure atmosphere.

Children, who are confined entirely to the breast milk of a healthy mother or nurse, or, at least, with no other addition to it than cow's milk diluted with water and sweetened with loaf sugar, until after the first dentition is accomplished, have always appeared to us to thrive well, and to be seldom troubled with even slight affections of the stomach and bowels. Nevertheless, after dentition has made some progress, we may, with great propriety, allow them, once or twice in the course of the day, in place of the milk and water, to partake of rice flour, arrow root or tapioca prepared with milk, and well sweetened—milk in which grated cracker or stale bread has been well stirred—animal broths with bread or cracker mixed in them—or roasted potatoes reduced to a fine thin pulp with cream. These articles should, however, be given in moderation, and be invariably prepared fresh each time they are used.

Until after the first dentition is completed, animal food, in our opinion, should form no portion of a child's diet; it is apt to increase the febrile excitement to which the system is already predisposed, and to augment the irritability of the digestive organs, which is an almost invariable attendant, to a greater or less extent, upon the process of teething. Subsequent, however, to the completion of the first set of teeth, a small portion of the more nutritive and digestible meats may be allowed, to children in perfect health, once a day; but these should never constitute their principal food; which should consist of preparations of milk with various farinaceous substances, plain custard, soft boiled eggs, bread and milk, and plain rice pudding. "Many people, from a mistaken expectation of strengthening weakly children, give them much animal food, sometimes twice or thrice a day; but it will be found much more frequently to add to their debility than to increase their strength. Those children, on the whole, who eat the least animal food, are the most healthy." (Clarke.)

Children experience, from even a very early age, the sensation of thirst, and are highly gratified and refreshed by a few mouthfuls of cool water, which, particularly during the period of teething, they earnestly, and repeatedly solicit, and swallow with avidity when presented. The gratification of this craving should not, therefore, be neglected, but the infant should be offered occasionally a portion of pure water, cool, but not decidedly cold. From the inattention of mothers and nurses, young children, suffering from thirst, are not unfrequently refused the only effectual means of gratifying it; and under the supposition that

they are hungry, are made to take the breast, or food is forced into their stomachs, of which they stand in no need, and which rather enhances than diminishes the uneasy sensation they experience; while a few spoonfuls of water would immediately satisfy their wants and

quiet their restlessness or crying.

As a general rule, it is undoubtedly a duty incumbent upon every mother to nourish her own infant; occasionally, however, when from disease or some constitutional infirmity, the mother is incapitated from performing this delightful task, it becomes necessary, as well for her own good, as for that of her offspring, to transfer the care and nourishment of the latter to a proper nurse. The choice of a proper

nurse is, however, a matter of no little importance.

It is essential, in the first place, that the female at whose breast a child is nourished, should be in the prime of life: between twenty and thirty years is the most desirable age, though a few years below or beyond this period will be of little importance, provided she is of a sound constitution, and enjoys perfect health. This latter is an all essential requisite, upon which the due support of the infant and its future health, in a very great degree depend. No female, therefore, should be selected as a child's nurse, who is labouring under any bodily infirmity; or who is even strongly predisposed to consumption, scrofula, or convulsive diseases. Her breasts should be full, firm, and well formed, the nipples sufficiently salient, and yielding the milk upon the slightest pressure. Her catamenial discharge should be entirely suspended. Her milk, also, should be as nearly adapted to the age of the infant as possible; a slight difference is, however, no objection; and the fact of her milk being adapted to a somewhat younger infant than the one she is about to suckle, is of less importance than if it be milk adapted to a child many months older.

But it is not merely necessary that the foster mother should enjoy the physical advantages just enumerated; she should possess, likewise, great mildness of disposition, considerable cheerfulness of temper, and an inexhaustible stock of patience. There are a number of moral defects which render a female totally unfit to give nourishment to an infant, or to assume the charge of it in any manner. Thus, an irritability of disposition, giving rise to frequent gusts of violent passion, has been known to produce so deleterious an effect upon the milk, as to render the child liable to convulsions, that partakes of it during, or immediately after, such exhibitions of ungovernable temper. Grief, envy, hatred, fear, jealousy, and peevishness, likewise, independently of their abstracting the mind from the duties necessary to be fulfilled towards the infant, by their influence upon the health, tend to alter the qualities of the milk, cause it to disorder the stomach of the child, and render it altogether unfitted for its nourishment. We take too little into consideration the pernicious and long continued, if not permanent, injury, which the character of a nurse may have, upon the temper, the intellectual powers, and the disposition of a child, by producing through the nourishment she imparts to it, as well as by her

treatment, permanent derangement of the digestive function with consequent imperfect nutrition, and disturbance of the nervous system.

The ancients evince, by their writings, a far greater acquaintance with this important truth, than exists at the present day, if we may judge from the advice of Plutarch to mothers who refuse to nurse their own offspring. "They should," he observes, "be cautious, at least, to choose carefully the nurses and attendants of their children; not taking the first that offers, but rather selecting the best that can be obtained. These should, in the first place, be Greeks in morals; for not more attention does the body of man require from the period of his birth, to insure the growth of his limbs in strength and symmetry, than does his mind, in order that, to his moral qualities may be imparted the same firmness and perfection as to his physical. During the period of infancy the tender and plastic mind receives readily whatever impressions, and assumes whatever form, we may desire to give it."

Much, it is true, of the physical as well as moral evil resulting from the misconduct of a nurse may be obviated, if the mother entrust not entirely the offspring to her care, nor consider, because she is obliged to delegate to another the task of giving nourishment to her infant, she is thereby exonerated from the task of attending constantly to the

promotion of its welfarc.

The diet of a nurse—whether that nurse be the mother or a stranger -should be a subject of strict attention; the quality of the food she takes exerting a powerful influence upon the character of the nourishment she imparts to the infant at her breast, and consequently upon the health of the latter. Her food should consist of such wholesome aliment as is in ordinary use, simply cooked, and eaten in moderation. Soups properly prepared, fresh beef or mutton plainly roasted or boiled, with a proper amount of vegetables, are to be preferred to made dishes, rich gravies, and highly seasoned viands, as well as to salted and smoked meats. As to vegetables, the different leguminous and farinaceous seeds or roots, variously prepared—the saccharine fruits of the season, either cooked or perfectly ripe—and the various dishes consisting of milk and vegetables, in common use, are all well adapted as food for a nurse; and, with bread, should compose a considerable portion of it. The acid fruits, pickles, and similar articles, very generally, prove injurious to her milk, and of course to the infant she suckles.

"I have known," remarks Marley, "a plentiful secretion of milk to be diminished in quantity, from the over anxiety of the mother, who thinking it necessary her nurse should live well, allowed her to cat a greater proportion of animal food than her stomach could digest. Others, who are fond of indulging an excessive and gross appetite, take advantage of their situation to satisfy their propensity for eating, under the plea of having two to support; others object to certain meats, as being injurious to their little charge. In fact, it is well known, that upon taking the situation of wet nurses, those women, who, a short time previous, would have been thankful for a plentiful meal, however

homely, are suddenly transformed into fastidious and dainty beings, considering their wants and wishes of the greatest importance. I have always observed, that if a woman who is nursing, eat heartily, but not immoderately, of plain food, avoiding that which is stimulating, she will, generally speaking, preserve her health, the result of which will be a plentiful secretion of milk. I consider meat once a day as

quite sufficient."

The only drink of a nurse should be water—simply water. fermented and distilled liquors, as well as strong tea and coffee, she should strictly abstain from. Never was there a more absurd or pernicious notion, than that wine, ale or porter, is necessary to a female whilst giving suck, in order to keep up her strength, or to increase the quantity and improve the nutritive properties of her milk. from producing such an effect, when taken in any quantity, such drinks invariably disturb, more or less, the health of the stomach, and tend to impair the quality, and diminish the quantity, of the nourishment furnished by her to the child. They "excite," to use the words of a recent writer, "a feverish state of the body, and create an artificial thirst, a thirst which is not expressive of any real want of the constitution, but a certain proof that the want does not exist. The greater the craving for them, under these circumstances, the more certain we may be that they are not needed, and that they will cause positive mischief to both mother and child. The constitutions of both are stimulated by them beyond what nature ever intended that they should The laws which govern the animal economy are positively infringed, and it is impossible that either mother or child can escape the penalty of that infringement. Both will suffer to a certainty in some shape or other; if not immediately, at a future period." "Thousands of children are annually cut off by convulsions, &c. from the effects of these beverages acting upon them through the mother." (Courtenay.—London Lancet, Feb'y, 1840.)

Moderate daily exercise in the open air, which, while it is sufficient to counteract the effects of her sedentary occupation, is not carried to the extent of producing fatigue, a nurse should never be induced to

neglect.

The place in which the nurse resides, if the infant be committed to her charge in her own habitation, is far from being a matter of indifference. It should be either in the driest and most healthy part of the city, or, what is preferable, in a healthy situation in the country—always freely ventilated, and kept scrupulously clean. A country residence for a nurse has one important advantage,—it indemnifies, in some degree, the infant for its removal from the maternal breast, particularly when the mother inhabits the confined and illy ventilated streets of a crowded city, the air of which is always more or less prejudicial in early life. Infants have been found invariably to suffer, to a certain extent, in health, when, after being accustomed to respire the pure atmosphere of the country they are removed to the city, and

breathe the confined and impure air which prevails in too many of its

streets and dwellings.

The proper period for the child to be taken from the breast, or weaned, and nourished altogether independent of the mother's milk, may be stated, as a general rule, to be at the termination of a year; within which period, however, the occasional use of other food may with propriety be allowed, according to the directions already

given.

At the termination of the twelfth month, the cutting of the first set of teeth is, in general, considerably advanced, and the digestive organs of the child are in a condition to effect promptly the solution of almost every species of plain and wholesome food; hence the propriety of depriving it entirely of the breast at this period. But when, as is occasionally the case, the process of dentition is more rapid, and the child is at the same time healthy and vigorous, it may be weaned at any period after the tenth month; while on the other hand, when dentition is more tardy, or the child is weak and sickly, it may be prudent, if the mother have a sufficient supply of milk, to continue it at the breast somewhat longer than a year. We are to recollect that, while the health of a child is very generally impaired by its being too early weaned, by confining it too long to the breast, it may likewise be seriously injured, as well from a diminution in the nutritive properties of the mother's milk, as by this being no longer adapted to the condition of the digestive organs of the infant—the functions of which have become more developed—nor to the perfect nutrition of the several organs of the body.

In deciding upon the proper period for weaning, the season of the year should be taken into consideration. In many parts of the United States, especially in the larger cities, this is indispensable to the safety of the child. When deprived of the breast at the commencement of, or during the summer months, its liability to a disordered state of the bowels, or to a severe attack of cholera infantum, is invariably much increased. Hence the spring or autumn should, if possible, be invariably made choice of for the period of weaning; and only under circumstances of the most imperious necessity, should it ever be attempted during the season of greatest heat, unless the stomach of the infant has already become fully accustomed to other species of food, and the functions of the digestive organs are performed with perfect ease and regularity. In almost every instance, however, when upon the approach of summer, a mother ascertains that, from any cause, she will be unable to suckle her infant until cool weather again returns, it will be more judicious to wean it somewhat earlier than, under other circumstances, would be desirable; so that its stomach may become accustomed to the new kind of food which is to take the place of the mother's milk, before the intense and continued heat of the weather shall have augmented the irritability of the entire alimentary canal, and rendered this liable to disease upon a change of diet. When, however, nothing occurs to prohibit it, the child's safety from disease will more certainly be secured, if the period of weaning be postponed until after the heat of summer is over.

When the diet of the child has been properly attended to, previously to weaning, and it has, for some months, been accustomed to other food than the milk of its mother it may be deprived at once of the breast, without the least fear of inconvenience resulting. It will, nevertheless, not be proper to allow the child, immediately after it is weaned, any amount of solid or stimulating food; neither should its diet be composed of too great a variety of articles. It should still be kept for some time upon a simple, bland, semi-fluid aliment, taken in moderate quantities and at proper intervals; otherwise we run great risk of over stimulating the system, or of oppressing the stomach, impeding or disordering the digestive organs, and of impairing or disturbing the regular nutrition of the different parts of the body.

At first, the principal food should be bread with milk—milk boiled with rice—soft boiled eggs—roasted potatoes with milk—oat meal gruel—plain rice pudding—the different preparations of arrow root, tapioca and sago, and simple meat broths, mixed with the crumb of bread or grated crackers, or in which rice or barley has been well boiled; after a time the child may be gradually accustomed to a more solid and nourishing diet. Until the age of puberty, preparations of milk and the farinaceous vegetables should, in fact, constitute the principal nourishment. During youth, a large amount of animal food is not necessary, as many imagine, to promote the growth and vigour of the body, nor to preserve it from the inroads of disease; these important ends are much more certainly attained by a more simple and less

stimulating diet.

Whatever may be the kind of food allowed during childhood, it should never be taken in excess; we are to recollect, at the same time, that children have usually very keen appetites, and that a sufficient supply of nourishing food is absolutely necessary to renew the waste of their systems, and to supply materials for their daily growth. Three, or perhaps four, light meals a day, will, in general, be all that is necessary. At one of these, the dinner or mid-day meal, animal food—beef, mutton or fowl, plainly boiled or roasted may be allowed in moderation; for the others, bread, or potatoes and milk, various preparations of rice, or rice and milk, plain rice or bread pudding, or custard, will form a proper and wholesome diet. All salted and high seasoned dishes, all fat gravies, every kind of overdone and richly cooked food, should be forbidden. Some have objected to butter for children; experience, however, would appear to show, that a very moderate allowance of butter, when eaten upon bread, is by no means unwholesome. Of vegetables, potatoes, carrots, turnips, beets and cauliflowers, will be found the most wholesome; they should all be of good quality, and, with the exception of the potatoes, should be well boiled; in general, the potatoe is most easy of digestion, and agrees best with the stomach, when roasted; it, as well as the turnip, should be eaten without being reduced to a fine pulp or mixed with butter or fat gravy. Children should never be

indulged in cakes or pastry of any kind; they may occasionally take a little of the cooked fruit of a pie, but even this should be only in

moderation.

The drink of children should be simply water; or, occasionally, they may be allowed milk, milk and water, whey, or very weak tea, with milk and sugar. Pure water, however, is the only beverage calculated effectually to quench thirst, and promote a free and healthy discharge from the various excretory surfaces and glands; and when children are accustomed solely to its use, they crave no other drink, but prefer it on all occasions to every other. Stimulating liquors, whether distilled or fermented, are not merely unnecessary, during childhood, but positively injurious: by the undue excitement they produce, they endanger the occurrence of fever, indigestion, inflammation or convulsions, to say nothing of the danger of a taste for "these pleasing poisons" being induced, leading, in after life, to habits of confirmed and beastly intemperance.

The period of a child's meals should be so regulated, that the intervals between them may not be so great as to permit a sensation of hunger being experienced for any length of time; but at the same time a sufficient period should be allowed to clapse between the meals, to prevent a disturbance of the digestive process by the introduction of new food into the stomach, before it has properly disposed of that already

taken.

Children should get their first meal or breakfast, as soon after they have risen, and have been properly washed and combed, as possible; their stomachs are then empty, and the appetite, in general, keen. If food be too long withheld under such circumstances, the cravings of the stomach become either too importunate, and too much food is taken, or the appetite entirely fails. Supper, or the last meal, should invariably be composed of the plainest and lightest articles of food,

and be taken an hour or two before bed-time.

As little variety of food as possible should be set before children, since every additional article becomes a new incentive to appetite, and consequently to excess. They should never be indulged with a second course. If they sit down with an appetite they will always satisfy it by eating freely of the first article presented to them,—hence all the rest is superfluous, and therefore injurious. If the appetite be but slight, the less they eat at the time the better,—as by taking but little, the appetite will more certainly return at the next meal. But should this instinct of nature for an observance of moderation be neglected, or be attempted to be overcome by variety, repletion, with all its evils, will certainly ensue. Instead of a renewed and healthy appetite following, as would have been the case had the instinct been obeyed, the appetite will be found diminished, and even head ache, fever, oppression, nausea or vomiting may occur.

Children should not be allowed to eat frequently of bread, bread and butter, bread and molasses, sweetmeats, cakes or fruit, between meals, for this will either destroy the regular appetite, or induce them to eat

too much. In the first case, the stomach will be interrupted in its regular routine of function, consequently the appetite will be either irregular or capricious; in the second case, all the evils attendant upon an over distension of the stomach must follow. They should, therefore, not be suffered to carry food in their pockets, to eat between meals, or during school-hours,—as this produces the injurious habit of requiring food at improper times, by which the digestion of the previous meal is interfered with—a fresh quantity of food being forced upon the stomach before it has properly digested that previously received. We are far from advocating the plan which debars a child from "an adequate quantity of wholesome food at any period throughout the day, when the cravings of a natural appetite actually demand it;" but we nevertheless believe it far better that the child should be accustomed to partake of food only at regular periods; and this is very soon effected, when those periods are made to correspond pretty closely with the periods of stomachic digestion.

Children who have no regular times for their meals, in general eat too much, and when refused food, however often they may crave it, become fretful and discontented. "They eat all day long—and soon impair their digestive powers, and become sick and debilitated."—

(Mayer.)

Children should be early taught to eat slowly and deliberately, so that each portion of whatever solid food they take may be fully masticated. To hurry children at their meals, by requiring them to finish as soon as their parents, though they may be helped last, and have usually much greater appetites than adults, is injurious, by obliging them either to leave off before they have had enough, or to swallow their food without its being properly comminuted by chewing.

Children are to be restrained from any violent exercise immediately after eating; they need not be kept perfectly at rest, but merely prevented from engaging in any pastime or occupation that requires considerable bodily exertion; and, as they should be early accustomed to eat slowly, and chew their food well, on this account alone the habit of resting after a meal is of importance, as it prevents them from swallowing their food hastily, in order that they may return

more quickly to their play.

In regulating the diet of children, care should be taken not to force any particular article upon them, after it is found, by a fair trial, not to agree with their stomachs. The contrary practice is both cruel and injudicious: cruel, because the poor child is forced to swallow what is disagreeable to it; and injudicious, because it is liable to perpetuate a disgust, which, most probably, would have subsided, had no forcible attempt been made to overcome it. At the same time, however, great care must be taken that permanent, capricious, dislikes are not formed at this period of life, against certain wholesome articles of food. This, however, is often a matter of very great difficulty—a good deal of close observation and discernment being required in order to distinguish between a wayward prejudice, and an actual disgust. The

former, if indulged in too long, may be converted into the latter—while the latter may often, by judicious and well adapted means, be

entirely removed.

Children should never be allowed to eat alone, unless the proper amount of food be meted out to them; otherwise they will, almost always, eat too much. Whenever a child demands more than is judged proper for it, its importunities should always be resisted with firmness,

or it will too certainly acquire habits of gluttony.

Children would seem to have a natural taste for sugar and all articles in which saccharine matter abounds; and they, in fact, are able to partake of a greater quantity, and for a greater length of time, of these articles without their appetite becoming cloved, than is the case with adults. Whether or not children should be indulged in the use of sugar and other saccharine substances has, however, been made a grave question of dispute by physicians.—"He," says old Slare, "that undertaketh to argue against sweets in general, taketh upon himself a very difficult task; for nature seems to have recommended this taste to man and all sorts of creatures." Nevertheless, there are writers, and of no mean eminence, who condemn, in the strongest terms, the use of sugar and other sweet substances, as injurious to the stomach, destructive to the teeth, and otherwise prejudicial to the health of the system. How such an opinion could have originated, it is certainly very difficult to imagine; so far from any bad effects being produced by the free use of sugar, at least under ordinary circumstances of health, it is shown, by the most conclusive evidence, to be a highly nutritious and useful article of diet.

It is, in fact, to the saccharine matter they contain, that a long list of fruits, and other vegetable productions, which constitute so large a portion of the food of man, and of the inferior animals, owe their nutritive properties; and experience has fully shown that sugar forms a very proper addition to the food of children as well as of adults. "It is the only condiment," says Leroy, "proper during the period of infancy." Whether, however, pure sugar can be eaten by itself, with perfect safety, is somewhat doubtful. To insure its ready digestion, and in that manner prevent its turning sour in the stomach, it would appear to be necessary, that it should be combined with other alimentary substances. It is in combination with mucilage and other vegetable matters, that it is met with in the juice of the cane, and in those fruits which the experience of mankind has shown to be the most nutricious. Hence, as a general rule, sugar should be given to children, rather as an addition to less palatable articles of diet, than as the principal food.

Much difference of opinion, also, exists as to the propriety of allowing children to partake of fresh fruits: by many they are entirely interdicted, while, by others, their allowance is qualified by numerous restrictions not very easy, under ordinary circumstances, to be observed. By a healthy child, nearly all the saccharine fruits, when perfectly ripe and mellow, may be eaten in moderation with

perfect safety; they furnish a very grateful and proper addition to their ordinary food. It must be recollected, however, that the whole-someness of fruit is always in proportion to its pulpiness, and to its saccharine and mucilaginous qualities. Unripe fruit, of every species, is decidedly injurious—as well on account of its being almost entirely indigestible, as from the injury inflicted upon the stomach by the crude acid juices it contains. All fruits that are invested with a firm cutiele or skin, are also improper for children; but the ripe pulp of such fruits, as in the case of grapes, when it can be entirely freed from the skin and seeds, is in general sufficiently wholesome and nutritive. Fruit containing an abundance of small, hard and insoluble seeds, as strawberries, blackberries, huckleberries, currants, and the like, should be eaten by children only in very moderate quantities, as the seeds are liable to be retained in the alimentary canal, and may excite considerable irritation of its lining membrane.

"Cherries are among the most pernicious fruits in common use and ought to be wholly excluded from the list of articles with which children may be occasionally indulged. Even when eaten without the stones, they are peculiarly apt to derange the bowels; and when swallowed with the stones, which, with children, is not unfrequently the case, they are capable of producing violent, and even fatal impressions on the alimentary tube. No small number of instances have come under my notice, where the most alarming, and, in a few cases, fatal consequences, resulted from the irritation of cherry-stones lodged in the bowels. Convulsions, inflammation, unconquerable constipation, and exhausting and harrassing diarrhea, are among the affections which are apt to arise from this cause."

(Eberle.)

Fruits stewed or roasted with the addition of sugar, are always very acceptable to children, and when tolerably ripe and not too sour, in general agree well with their digestive organs. The same remark will apply to fruits preserved in sugar: when eaten in moderation, with milk or bread, they form an innocent, and in the case of the habitually costive, an advantageous, addition to their meals. They are improper only when the bowels are peculiarly irritable and liable to be disordered from slight causes—when taken in immoderate quantities, or upon a loaded stomach. Dried fruits, when deprived of their skins, and stewed with the addition of sugar, seldom produce any injury to the stomach of a child; but when uncooked, and eaten with their skins, are difficult of digestion, and disorder, often to a very considerable extent, the digestive organs. We have, in repeated instances, seen attacks of violent vomiting and purging—distressing cholic—and even convulsions of a very dangerous character, produced from the use of this kind of fruit—notwithstanding the amount taken has not been in the least degree immoderate.

5.—Sleep.

During the first period of its existence, an infant passes the greater

part of its time in sleep; it awakes merely to satisfy the instinctive calls for food, and, when these are appeased, falls again into a state of repose. This tendency to sleep is a wise provision of nature abstracting the infant, for a time, from the influence of those agents, the continued action of which would cause too great an excitement of its nervous system and interfere with the regular and perfect performance of the functions of its various organs. Almost constant sleep is, in fact, equally important to a new-born infant as sufficient and proper nourishment, in promoting the growth and due development of its system. We may rest assured, that whenever an infant is wakeful and restless for many hours, during the day or night, it suffers from too much or improper food, tight clothing, or from some uneasy sensation produced by other causes. After the lapse of a few weeks, however, the senses become cognizant of external objects, and the sleep is less continued, occurring only when the organs, fatigued by the exercise to which they have been subjected, require to have their energies renewed by repose. The infant sleeps now less during the day, while at night its repose is seldom broken. When six months old, it may be accustomed, by proper management, to require sleep only at regular periods, and soon after, during the night alone. As soon as this can with propriety be effected, it is of advantage to both child and mother.

The sleep of an infant, to whatever period it is confined, should be the result, always, of the natural tendency to repose, prompted by proper nursing, and never, either by day or night, should it be procured by the administration of opiates. The mother or nurse, who to gain time for other occupations, or to prevent her own repose from being disturbed by the wakefulness of the child during the night, causes it to sleep by the administration of stupefying drugs, runs the risk of promoting her own ease and comfort at the expense of the health and life of the infant. "Many an infant, the true cause of whose death was not always suspected, even by the guilty person,

has thus passed prematurely to its grave." (Combe.)

A young infant requires a soft, warm couch for its repose, with sufficient covering to protect it from the slightest impression of cold. The covering should, however, be at the same time, sufficiently light to prevent undue pressure upon any portion of the infant's body, and so accommodated to the state of the weather, as to preserve a sufficient degree of warmth, without overheating the child or endangering profuse perspiration. It is too much the custom to lay an infant, when asleep, with its body warmly clad, in a feather-bed and to cover it carefully with a thick blanket or two. The consequence is, that in mild weather, or in a warm room, a copious perspiration is quickly produced, which, besides weakening the child, exposes it to cattarrhal or even more dangerous affections, when, upon its awaking, it is exposed to the air of the room, or perchance to the draft from an open door or window.

During the few first weeks after birth, it is perhaps best that the infant should sleep at night in the same bed with its mother.

especially if the weather be cold; subsequently, however, it may be accustomed by night, as well as by day, to sleep in a cradle or cot. By a few physicians it is advised to have the cradle invariably without rockers—the motion communicated to the child in rocking being considered decidedly injurious. There are few infants however, to which this motion does not appear to communicate a pleasing sensation, predisposing them to quietude and sleep; and we are convinced that when gentle, and not resorted to to induce a state of repose at improper periods, it can be productive of no possible inconvenience or injury. We admit that violent, long-continued rocking, by the sudden and repeated jolts it communicates to the tender organs of the infant, may be productive of injury, and should, therefore, never be allowed. There is one disadvantage resulting from the use of a cradle, which is, that children often become so habituated to its motion as to be with difficulty made to sleep without it: they require, in consequence, an almost constant attendance, awaking the moment the motion of the cradle is suspended, and continuing to cry until rocked to sleep again: whereas, children who have been accustomed to sleep in a cot, will remain comfortable and quiet for hours even after they awake. The cot has unquestionably some advantages over the cradle; nevertheless, with proper precautions, either may be adopted, according to the taste or convenience of parents.

It is, unfortunately, too often the case, that in infants the natural instinct in regard to sleep and wakefulness are but little attended to. An infant is often roused improperly from its repose, because it may be convenient for the mother or nurse at that particular moment to wash and dress it, or from a supposition that it has been too long without the breast; while, on the other hand, every means, and often very improper ones, are frequently made use of to force an infant into a state of repose when not inclined to sleep, or to prolong its repose when it is about to awake. The effect of this improper interference is to render the infant restless, peevish, and far more troublesome than it would have been had it been allowed to indulge freely its natural disposition to repose, or to wakefulness. When an infant is in perfect health, properly clad, and judiciously nursed, it seldom gives much trouble; it awakes when it requires nourishment, and falls readily asleep when its system demands repose; and every attempt to interfere with this natural state of things is attended with more or less injury to the health of the little being.

"When a healthy infant does not fall speedily asleep when placed in its cradle, but lies awake fretful and restless, we may in general be certain, either that it does not feel the want of repose, or that something incommodes it or causes it pain; that some portion of its dress is too tight; or the point of a pin is in contact with its body; that it is in want of food, or has been over-fed or with improper aliment; or that it is suffering from cold or heat, or from a too confined or impure atmosphere. It will be readily perceived, therefore, that the only

proper means to lull it to sleep is to remedy at once the cause upon

which its wakefulness depends." (Carault.)

It is important that the sleeping couch of an infant be placed in such a position that the eves of the occupant shall be screened from a dazzling or unequal light, and the latter prevented from falling upon them sideways or very obliquely. When the light which enters the apartment is moderate, and of a mellow character, the face of the child should be directly in front of it; but when intense or dazzling, it is better to place the child in such a direction as to allow it to fall upon the back part of the head, or on the back of the cradle or cot. When, in the evening, a lamp or candle, or when an open fire is burning in the room, the same precaution should be observed. infant, the moment it wakes, directs its eyes almost instinctively, towards the light, there is danger, unless this be uniformly diffused throughout the apartment, or placed in a direct line with the eyes, that the child will acquire a permanent obliquity of vision, from the habit of viewing the light sideways. This deformity is more particularly liable to take place, and to a much greater extent, when, from the head being sunk in the pillow, or enveloped in a cap with a projecting border, the light can be viewed only with the eye which is the farthest from it.

The position in which an infant when asleep is laid upon its couch, is a matter of much greater importance than, at first view, it would appear to be. If it be placed upon its back, the fluids which are abundantly secreted by the glands of the mouth and throat, are in danger of flowing into the windpipe and thus impeding respiration, or causing a violent—almost spasmodic—paroxysm of coughing, which may be avoided by the child being laid upon its side. Care should be taken, however, not to lay it always upon the same side of the body, lest permanent deformity be occasioned, in consequence of the circulation of the blood in the limbs upon which the infant constantly rests being partially impeded, and their proper growth in this

manner prevented.

The face of an infant should never be entirely covered, nor so imbedded in the pillow as to impede, in the least degree, the freedom of respiration. Occasionally it happens, that when a young infant is placed in a soft feather bed with a thick soft pillow, its own weight causes it to slip, so that its head is brought entirely beneath the external coverings, and, in common with its body, becomes so completely buried in the feathers as to endanger suffocation. This accident is best guarded against by dispensing with the pillow entirely. In cold climates, and during the winter season, a feather bed is certainly a very effectual means of securing to a new-born infant a necessary degree of warmth; but after a few months, especially in summer, or when the temperature of the air is mild, a well constructed hair mattrass with a proper amount of light, soft bed-clothes, is to be preferred. Independently of the undue degree of heat which is generated by a feather or down bed, and pillow, and the exhaustion which thence

ensues, the attitude into which the child's body falls during sleep, may induce, when it is resumed every night, a permanent distortion. A feather pillow, by keeping the head too warm, not unfrequently becomes the remote or exciting cause of cattarrhal affections, inflammations of the ear, eruptions, pain of the head, or even more serious disease. For the same reason, children should be accustomed, from an early age, to sleep with the head bare—the covering with which nature has, in general, so plentifully supplied this portion of the body, being amply sufficient to protect it from cold.

The cots occupied by children should always be without curtains, which do injury, by preventing the proper circulation of the air. They become also receptacles for fine particles of dust, which are liable to be inhaled during sleep, whenever disturbed by the motion of the curtains or of the cot: this alone, according to Willich, is a cause to which may be referred the origin of many a consumptive

attack in early life.

Children should never be allowed to sleep on beds placed upon or too near the floor. It is well known that in all apartments occupied by living beings, the inferior portions of the atmosphere are always the most impure. The most wholesome situation for a bed is in the middle of the room, and raised some feet from the floor. From the vitiated state of the atmosphere immediately above the latter, and the great importance of a free ventilation, the practice of placing the children's bed or cot beneath another bed-stead during the day, cannot be too severely reprobated.

The chamber occupied by children, during their hours of repose, should be kept scrupulously clean, and free from dampness; and at all seasons, when the weather is not rainy, or otherwise very humid, it should be freely ventilated during the day. It should be divested of all unnecessary furniture; and, unless of considerable size, should never contain more than one bed. There cannot be a more pernicious custom, than that pursued in many families, of causing children to sleep in small confined apartments, in which two or three beds are

crowded together.

Plants, flowers, and strong perfumes of every kind should be carefully excluded from the sleeping apartments of children. The first have a tendency to render the air of the apartment impure, and the latter have been found to produce a very deleterious impression upon the nervous system of young children. An instance is related by Kopp, of a child, two weeks old, destroyed by the scent of savine oil, which became diffused through the room in which it was sleeping, while the father was applying it to his thigh as a rubefacient for the removal of a rheumatic affection. The child until then had been perfectly healthy, and no other apparent cause of death could be discovered.

Children should not be allowed to sleep with persons advanced in age, nor with those of a broken down or debilitated constitution, or who are labouring under any chronic disease. The idea that any injury to health can result from passing the night in the same bed

with the aged, or those who are affected with any other than contagious or infectious maladies, has been ridiculed by some physicians—while by others it is considered as fully established by numerous facts: we are among the number who believe the apprehension of injury from this cause to be well grounded. Although we are not prepared to assert, with Carault, that in "young infants, accustomed to sleep with their grandfathers or grandmothers, or with an aged nurse, that part of their bodies which, during sleep, approaches the nearest to their bedfellows, will become enfeebled, pale and emaciated," yet we have seen, in more than one instance, the general health of children sensibly impaired by sleeping with old and diseased persons—and quickly restored when the practice was discontinued.

By many of the continental writers, to prevent the too frequent and close contact of young children with adults generally, of whose entire health we are not well assured, is considered to be an important precaution. "It is unquestionably a filthy and pernicious custom to suffer infants to be indiscriminately embraced, fondled, and kissed by strangers or servants; because in this manner there is danger of their becoming infected with many virulent diseases. But even though no particular malady should be imparted by their close contact with strangers, it is to be feared that the humours of the child may be contaminated by absorbing the poisonous saliva of a diseased individual."

(Struve.)

A young child should not be awoke from its sleep suddenly—nor by any rude motion or loud noise. The shock which is thus inflicted on its delicate brain and nervous system may occasion a severe attack of convulsions, spasmodic closure of the glottis, and other equally severe and dangerous effects. "Being of opinion," remarks a quaint old writer, (Marquis of Halifax,) "that it did trouble and disturb the brains of children, suddenly to awake them in the morning, or snatch them violently and over-hastily from their slumbers, wherein they are much more profoundly envolved than we, my father caused me only to be waked by the soft strains of some musical instrument."

To prevent infants from starting from their repose in affright at every slight noise which occurs in their vicinity, no particular pains should be taken to maintain perfect silence when they are about to fall asleep, nor during their repose. If accustomed to the ordinary sounds of the nursery, they will fall readily asleep amidst them, and much of the danger of their being suddenly awoke or unnecessarily disturbed, is removed. With Combe, we agree that, when asleep, an infant should be excluded from "light and noise." "Even when they do not prevent sleep, these tend to render it troubled and unrefreshing;" and they commit a great and pernicious mistake, who "act in direct opposition to this rule, and think it of no consequence what talking or noise goes on in the nursery, provided the infant be not roused up broad awake." It is to the opposite error, of attempting to exclude from the vicinity of a sleeping child every kind and degree of sound that we object. We have known children who have been so accus-

tomed to a dead silence when falling into sleep, and during its continuance, that the occurrence of the most trifling sound would immediately awake them, and, if a little louder, would cause an alarming excitement, of long continuance, and difficult to subdue.

Children should be accustomed, from a very early age, to retire to bed early in the evening, and to rise the moment they awake after day-light. Habits are thus formed, of the utmost importance to their

health throughout life.

6.-Exercise.

For the first few weeks of its existence, the infant requires but little exercise; and it is not until some months have elapsed, that its organization has acquired a sufficient degree of firmness, to permit of its enjoying any other than such as is of the most gentle, passive kind. From an early period, however, gentle friction with the hand over the whole surface of its body, carrying it about in a horizontal or slighty reclined position on the nurse's arms, either within doors, or, when the weather will permit, in the open air, not only communicates a pleasurable sensation to the infant, but, by promoting a free and equal circulation of the blood, contributes to the full and regular development of every part of its body. But while this amount of exercise is decidedly beneficial, and should not be neglected, we are to recollect, that every species of dandling and tossing—every kind of motion, in fact, excepting of the gentlest kind, is liable to produce present discomfort, if not permanent injury. For the first month or two, the infant should be handled as little as possible, and never placed in an erect or sitting posture. To sit it upon the lap while its bones are soft and pliable, its joints slight, and imperfectly developed, and its muscles small and feeble, and to jolt it thus by the hour—its poor little head moving about as if palsied, and its tender back bending and twisting from side to side—is the very worst plan that can be adopted to minister to its comfort, or to promote its regular and symmetrical growth.

Many nurses would appear to think, that the greater the amount of motion to which an infant is subjected the better: they toss and roll it about, as if it were a bundle of rags, and pull and twist its limbs, till the joints crack. It is not then to be wondered at, that the poor child moans, cries, or screams, during the time occupied in dressing it, or that it should suffer from deformities and other injuries.

Another barbarous practice is, that of tossing an infant up and down in the arms, held at full length from the body. The motion thus communicated, is of too violent a kind to be borne with impunity by the tender frame of a young infant, to say nothing of the serious accidents which may result from the practice, even when the utmost care is observed.

Until an infant is able to sit alone it may be allowed to amuse itself upon its cot, or on a soft cushion spread upon the floor; here it will

lie for hours, until it acquires strength to roll about, and is much more contented, and thrives far better, than when continually nursed in the arms or upon the lap; the danger of deformity is likewise avoided, and the child acquires, at a more early period, the power to raise itself, and sit upright, without assistance; and at nine or ten months will, in

general, be able to get upon its feet and walk.

When sufficiently old to be attracted by surrounding objects, carrying it frequently into the open air, especially into the country, during the mildest seasons of the year, has a highly beneficial tendency. The freshness, beauty, and variety of the scenes of nature, are highly attractive, even at a very early period of life; and, independently of the healthful influence of the pure and unconfined atmosphere, the impressions thus resulting are always of a decidedly salutary kind.

In carrying an infant, some important precautions are necessary. The spine, being soft and yielding, is incapable of supporting the weight of the head, and other parts of the body, which rest upon it in the erect To prevent deformity, therefore, an infant should not be held seated upon the arm of its nurse or attendant; it ought always to be carried in an inclined position, so that the head, and every part which bears upon the spine, may receive an equal and adequate sup-Neither should the child be carried for too long a time in the nurse's arms without changing the position in which it is held—otherwise there is a danger of its becoming permanently deformed, from its body being twisted to one or the other side. To obviate this, the child should be carried alternately, on both arms. Even in suckling an infant, it is important that it be not confined exclusively to one breast, but nourished, alternately, from both—as well to prevent its contracting a crookedness of form, as to guard against its acquiring a habit of squinting, from one of its eyes, while nursing, being constantly directed towards one point.

Infants, in general, derive much pleasure from riding in a little carriage drawn by the hand—and as this affords a convenient means of conveying them, frequently, when the weather is mild, and otherwise favourable, to one of the public squares or parks which exist in most of our larger cities, or even to a garden or field without the town, where they may enjoy a free and fresh air—this species of exercise may be occasionally substituted for carrying in the arms—to which, for out-door excursions, it is, for very young infants, in many points

of view preferable.

The body of the carriage should be long enough to permit the infant to lie down at full length; and the sides ought to be sufficiently high to prevent it falling or rolling out. The wheels should be low, in order to lessen the liability of oversetting; and they should be carefully secured against running off when the carriage is in motion. Very young infants should be laid down in the carriage on a pillow or soft mattress, with the head slightly elevated, and so confined at the sides as to prevent them from rolling when in motion. After the child has acquired some degree of strength, it should be placed in a

semi-recumbent posture, with its head and back well supported by pillows, &c.; and when it is capable of supporting its head, it may be permitted to sit upright, being properly secured against being thrown from side to side, by the rolling of the earriage. (Dewees.) The carriage should be drawn by none but a prudent and trusty person, with a moderate and steady motion, and never over rough or uneven ground: when the motion is too rapid, or uneven and jolting, much injury may be inflicted on the infant.

Children, when placed in the carriage, should never be kept standing in the sun, if it be warm; nor should they be kept motionless, when the weather is cool. In cold weather, they should be amply covered, since from the passiveness of their situation, they will require additional clothing. Nor should the ride ever exceed half an hour at a time, especially if the child is observed to become sleepy—it being hazardous to allow children to sleep in the open air, and after a few trials, the exercise almost invariably will predispose them to sleep, and thus destroy the benefit of the exercise, as well as interfere with their

regular habits of repose. (Dewees.)

It is only toward the end of the ninth or tenth month, and, when the child is feeble, even much later, that it is proper to teach it the use of its feet. Before an infant attempts to walk, it should first learn to crawl. With this intention, it should be placed upon a soft carpet, where it soon busily employs itself, moves and extends its limbs, or rolls about to reach its play-things. The instinctive desire for loco-motion, and the various things that attracts it in different parts of the room, will soon induce it to crawl upon its hands and feet. This it should be allowed, and even encouraged to do; as children who are permitted this "useful intermediate muscular discipline," are sure to acquire a much firmer step, and enjoy more robust health, than those who have been taught to walk without it.

In no instance should any particular attempt be made to induce children to use their feet at an early period, or until the bones have acquired a sufficient degree of solidity to sustain the body, without the danger of their becoming bent by its weight. In teaching a child to walk, it should be left pretty much to its own efforts; all artificial support is injurious. As generally applied, such support has a tendency to produce an unnatural elevation of the shoulders, while the infant, depending upon it, almost alone, for maintaining the upright position of its body, is accustomed to bend too much forward, or to one side. By this may be laid the foundation of a permanent deformity, or at least of an ungraceful gait, which it is impossible in after life to correct.

"While in the nursery, infants may be taught to rise from the floor by laying hold of chairs; and, if occasionally supported under the arms, they will easily learn to stand erect; but they should never be raised up by one arm only. At an early age they may be held under both arms; and when thus supported, if the hands of the attendant be occasionally withdrawn for a moment, they will soon acquire the power of standing alone. Mild and persuasive language ought to be used in these experiments; while the infant may be encouraged by some toys, placed at a little distance, which will induce it to stretch out its little arms, and endeavour to advance towards the place containing the desired objects. By such means, it may be allured to visit different parts of the room. The first journey of this kind ought to be attempted only from one neighbouring chair to another; afterwards the little traveller may run towards its mother, or nurse, who, with extended arms, stoops to receive it. As the infant improves in its efforts to walk alone, the chairs may be placed at a greater distance from each other, until, finally, it walks firmly in every direc-

tion, without assistance of any kind.—(Struve.)

The practice of assisting a young child to walk, by holding him by one of his hands, is extremely reprehensible; the child's arm being continually, and more or less forcibly, extended upwards, should the little pedestrian lose his balance, or trip, or if, from the feebleness of his limbs, he be unable for any length of time to maintain the erect posture, the whole weight of his body becomes suddenly suspended by one arm. It is easy to perceive, that this practice must necessarily, and in no inconsiderable degree, tend to draw the shoulder and side of the chest out of their natural position, and, when frequently repeated, to cause permanent deformity of these parts. From the sudden and violent extension which the arm usually receives when the child stumbles, the shoulder and elbow joints are liable to be dislocated or sprained, or the clavicle may be torn from its attachment with the scapula. I have met with several instances of dislocation of the shoulder joint, which were occasioned in this manner; and the occurrence of painful sprains—often of several weeks continuance—from violence done in this way, is by no means uncommon. Similar injuries are also inflicted by raising the child from the ground by one arm, in order to help it over some obstacle, or to hasten its progress over a rough and difficult piece of ground.— (Eberle.) We have seen a heavy child carried thus, by one arm, for a considerable distance. The practice cannot be too strongly condemned. Some of the most violent and troublesome affections of the elbow and shoulder joints that we have met with, in children, were thus induced.

As soon as a child has acquired sufficient strength to walk alone, he should be allowed the most perfect freedom of exercise; upon this, with the free use of pure air, will depend, in a great measure, his health, vigour, and cheerfulness, during the period of youth, while it will contribute essentially to the permanency of the same blessings until the close of life.

Throughout the whole animal kingdom, the young are prompted by an instinctive impulse, to almost constant exercise. Conformable to this intimation of nature, a large portion of the youth of man, should be passed in those harmless sports which exercise the limbs, dilate the chest, and communicate motion and vigour to every part of the body susceptible of it, without, at the same time, requiring any

minute direction from the head.

Experience has shown, that when attempts are made, in early youth, to interfere with the natural movements and exercise of the body; when, from a false idea of improving the shape, or giving grace to the carriage, children are debarred the free and unrestrained exercise of their limbs, and are confined to any particular position, for too long a period, they become restless and uneasy, and their muscles acquire tricks of involuntary motion. Twitching of the features, gesticulations of the limbs, even dangerous and permanent deformity, or some severe nervous affection, may be the result of such unnatural restraint. Error in this respect, it is true, is but of occasional occurrence, in the physical education of boys. But how often has an over anxiety for delicacy of complexion in a daughter, or the apprehension that her limbs may become coarse and ungraceful, and her habits vulgar, been the means of debarring her from the enjoyment of either air or exercise, to an extent sufficient to ensure the due development, health, and vigour, of her body? The consequence is, that in too many instances, females acquire in infancy, a feeble, sickly, and languid habit, which renders them capricious and helpless, if not the subjects of some troublesome or painful disease, throughout the whole course of their after lives.

The bodily exercises of the two sexes ought, in fact, to be the same. As it is important to secure to both, all the physical advantages which nature has formed them to enjoy, both should be permitted, without control, to partake of the same rational means of insuring that vigour of body, and cheerfulness of mind, which will enable their various organs to perform, regularly and perfectly, their respective functions; and by which alone their health and comfort can be confirmed. Girls should not, therefore, be confined to a sedentary life within the precincts of the nursery, or, at best, permitted a short walk, veiled and defended from every gleam of sunshine, and from every breath of air. The unconstrained enjoyment of their limbs and muscles, in the open air, without a ligature to restrain the freedom of their motions, or an ever-watchful eye, to curb the lively joy of their unclouded spirits, is equally important to their health and well-

being, as to that of their brothers.

To hope to communicate graceful form and motion to the limbs of a child, health and vigour to its constitution, and cheerfulness to its spirits, by confinement, belts, ligatures, and splints, superadded to the lessons of the posture master, is about as rational as would be the attempt to improve the beauty and vigour of our forest trees, by transferring them to the greenhouse, and extending their branches

along an artificial frame work.

Equally absurd and irrational is it, to fetter the active motions of a child, almost as soon as he has acquired the free use of his limbs, under the pretence of improving his mind. To confine a lad within doors, and especially in the heated and impure air of a school room, for the greater part of the day; to chain him to a desk, and require him to fix his attention, hour after hour, upon tasks, always without interest, and often beyond his comprehension, may be a certain way to train up enervated puppets, or to produce, perchance, a short-lived prodigy of learning; but it is illy calculated to form healthy, well informed, and accomplished men. Every feeling heart must have looked with pity, upon the sickly countenance, and melancholy aspect, of the poor little puny creatures, of eight, ten or twelve years, sometimes exhibited by parents as proficients in learning, or for their early acquisitions in languages, elocution, music, drawing, or other acquirements. Debarred from the healthful and joyous pastimes adapted to their age, and from inhaling "the pure fresh breath of heaven;" their mind has been forced, through constant, painful application, to a premature, but imperfect and unequal exertion of its faculties, the effect of which is to exhaust its powers, and impede its full development; while, at the same time, the natural cheerfulness of youth is destroyed, the health and vigour of the body materially impaired, the duration of life shortened, and the remaining period of existence rendered a burden rather than a blessing.

We are far from objecting to an early attention to the proper cultivation of the intellect. All we insist upon is, that it should not, in early youth, be taxed beyond its powers; but that the greater part of every

day should be devoted to active exercise in the open air.

There is not, perhaps, remarks a sensible German writer, a greater and more reprehensible mistake in education, than the very common practice of compelling children to extraordinary mental exertions, and exacting from them an early and rapid progress in intellectual pursuits; this is, too often, the grave both of their health and of their talents. The age of infancy is designed for bodily exercise, which strengthens and perfects the frame, and not for study, which

enfeebles it and checks its growth.

Let the beginning of life, the first six years, perhaps, be devoted entirely to forming the body and the organs of sense, by exercise in the open air. It is not necessary that the child should be permitted to grow up like a wild animal; for, with proper care, his mind may be made to receive considerable and valuable instruction, through the medium of the senses, and the conversation of those around him. In these two ways, he may, indeed, acquire more useful knowledge by the end of his sixth year, than a child who had learned to read in his fourth. In his seventh year, he may spend an hour or two daily at his book; in his eighth, three hours; and so on until his fifteenth, when he may have six or seven hours allotted for study.

Children are frequently confined to the school-room for many hours daily, when not occupied in any useful pursuit;—which time, without detracting from that necessary for the cultivation of the mind, might, with great propriety, be devoted to those bodily exercises and recreations, which tend to develope the strength, and promote the regular

and energetic action of every organ of the frame—the brain and nervous

system included.

The first occupations of the day should be abroad, for the benefit of inhaling the early morning air. There is always a striking difference in the health and freshness of complexion, and cheerfulness of features, exhibited by the child who has spent some time in out-door exercise before his morning task, and the one who passes immediately from his couch to study, or other in-door occupations. Children are always fond of early rising, when their natural activity of disposition, and disinclination to remain long in a state of quiet, have not been coun-

teracted by habits of indulgence.

We are to recollect, that it is not amusement alone, that is sufficient to confirm the health, and promote the growth and regular development of the frame, in childhood. Hence, as Struve well remarks, sedentary games are improper for children; whose principal occupation should be to exercise their limbs. To walk, to run, to skip, to jump; to put things together, and separate them; to erect and destroy houses built of blocks and other similar materials; to trundle a hoop, fly a kite, or arrange, construct, and manage little vehicles in their own way; all these are diversions that ought to be sedulously encouraged, and the necessary articles for their pursuit supplied. The latter, however, should be simple, and of little intrinsic value, as this is soon enhanced in the possession of the young. For boys, a ball, a top, a hobby horse; a little chaise, a wheelbarrow, which children can manage without any extraneous assistance, are preferable to more expensive toys, which afford amusement without exciting to bodily exercise. A somewhat similar remark may be made in relation to the playthings proper for female children:-it is a material error in physical education, to make that ill founded distinction between the sexes, which condemns female children, from the cradle, to a sedentary life, by permitting them scarcely any other play things than dolls and tinsel work, or toys, while their sprightly brothers are amusing themselves in the open air, by beating their hoop, or by other active diversions. Such premature confinement is dearly purchased at the expense of health and of a cheerful mind.

All amusements, even the most active, are most beneficial when pursued in the open air; were it possible to keep children of both sexes continually in the fields and gardens, there would be no necessity for supplying them with playthings. The natural objects around them, would present a sufficient variety for their amusement; and in these they would find an inexhaustible store of materials for constructing toys, which being works of their own creation, would please them far more than the most expensive artificial contrivances.

Society increases the charms of exercise, and augments its beneficial effects. It is, therefore, desirable and proper, to allow a number of children to assemble in their sports and amusements. It will, however, be prudent to watch their conduct; but without rigour, or unnecessary interference on the part of the overseer. Children are

the most happy, and most actively engage in exercise, when left to themselves in its choice and pursuit. Even at an early age, children should not be taught to depend too much on the assistance and direction of their nurses or superintendents: - if the ground be favourable, that is, if it be soft, or covered with grass, and free from stones, timber, &c., they should be permitted to have pretty much their own way. A few falls will do them no injury; but, on the contrary, make them less timid, and teach them, better than any other instruction, how to avoid similar accidents in future. Children who are never suffered to surmount the little difficulties which may occur in their sports, by their own efforts, and are continually warned against trifling accidents, seldom fail to become unduly timid, helpless, and irresolute in their actions. Exaggerating the dangers incident to the usual sports of children, and plying them continually with admonitory injunctions against accidents, when they are engaged in play, is calculated to favour the occurrence of the very accidents which these means are meant to obviate, by the timidity they almost inevitably inspire.—(*Eberle.*)

The leading precautions to be observed in regard to the exercise of children, is to prevent it from being carried on in the open air, in very damp or wet weather; and, during warm weather, to guard against exposure to the direct rays of the sun. Exercise, also, of a very active character, should not be engaged in by children, immediately after meals;—nor, when by exercise the body becomes heated, or perspiration is induced, should children be permitted to throw off a portion of their clothing, or to sit upon the ground, or in a draught of air, in order to cool themselves. It would be better, particularly during the milder seasons of the year, if, whilst actively engaged in exercise, a lighter dress than usual were worn, some additional clothing being immediately resumed when the exercise is suspended.

While a large amount of active exercise is essential to health, and to promote the full and regular development of the body, in children generally, there is no class of them who stand more in need of it, or who derive from it a greater amount of benefit, than those who, in consequence of their delicate and slender organization, are too often confined within doors, and debarred entirely from engaging in the boisterous pastimes of their more robust companions. They may not, it is true, be able to endure, at first, the same amount and degree of exercise as the latter. But when allowed to follow their own inclinations, they will be led by the example of others, to pass the greater part of their time in childish sports, in the open air, by which their limbs will speedily acquire development and strength, and every function of their system that full activity, which can alone guard them, in after life, from suffering and disease.

The absurd notion, that the health of weakly or delicate children, is to be promoted by confinement and inactivity, has not unfrequently induced parents to commit a very serious error, in determining upon the future occupation of their sons; selecting for those of a slender and delicate

frame, a profession, or some sedentary employment; while, to the robust and vigorous, is often assigned a more active and laborious occupation, demanding considerable bodily exertion, and repeated exposure to the open air. As a general rule, the very opposite of this course should be pursued: the robust being best able to bear up against the pernicious effects of that confinement and inactivity, to which the enfeebled constitution will very speedily fall a prey; while the latter will be materially benefitted by the very exertion and exposure to which it is supposed to be unadapted.

7 .- Moral Treatment.

At no period of life does the cultivation of a cheerful disposition, tend more powerfully to the promotion of health, than during infancy and youth. It is a common observation, founded upon experience, that fretful and peevish children seldom thrive well; and it is amazing how soon, by mismanagement or neglect, their naturally cheerful and joyous dispositions may become impaired, or exchanged for a state of almost constant fretfulness and discontent.

A due attention to the moral education of children is seldom commenced sufficiently early. Although it is true, that many of the passions have no existence during infancy, while others may be said to be still in the bud, nevertheless, even in the cradle, the exhibition of fear, anger, resentment, jealousy, and their kindred emotions, is by no means unfrequent—and if not counteracted by firm, prompt, and judicious management, on the part of parents and nurses, these passions become often prematurely developed to a fearful extent—impairing the present health and comfort of the child, and sowing the seeds of discomfort and suffering, to destroy the happiness of the whole remaining period of its existence.

It is too commonly the case, that the entire system of nursery discipline has a direct tendency to call into action, at an early age, the passions of the child—rather than to still them, or to direct them into their appropriate channels. At one time he is dandled and coaxed, in order to quiet him; at another he is scolded and beaten for the very same purpose. We either do what he desires, or oblige him to do what we like: we comply with his whims, or make him submit to ours. Thus no medium is observed; and he is doomed to be always either giving orders or receiving them; the first ideas he forms are those of dominion and slavery; before he can speak, he commands—before he acts, he obeys; and sometimes he is corrected, before he is conscious of faults, or even before he is capable of committing any. Thus we seize the earliest opportunity of implanting in his tender mind those passions, which are afterwards unjustly attributed to nature—and having taken pains to render him depraved, we complain when we find him so. (Rousseau.)

A peevish and fretful disposition in infancy, if not, as is generally the case, the result of errors in nursing, or too close confinement in a

stagnant and impure atmosphere-by which the energies of the system are impaired-digestion materially impeded, and the sentient organs subjected to impressions, if not positively painful, at least uncomfortable-is often induced by unkindness, impatience, or want of temper on the part of the mother or nurse. An infant whose natural inclinations are continually thwarted-who is placed in the cradle and attempted to be forced to sleep, when it would be awake and playful-and whose disinclination to repose, and the cries by which this is expressed, expose it to angry chidings—a passionate slap, or a rough shaking from its attendant—or whose calls for its natural food, or desire to be nursed and diverted, are repelled by equally injudicious means, will seldom fail to become peevish, restless, and fretful. It may be proper, on many occasions, to soothe an infant to repose, by gentle fondling, and the soft lulling notes of some nursery air; but if these do not quickly succeed in producing the desired effect, it is better to desist at once, than to resort to any others.

By endeavouring, as soon as the first period of infancy is passed, to accustom the child, as much as possible, to regular periods for eating, sleeping, and all other natural operations, much of the trouble attendant upon the duties of the nursery may be avoided, and its quiet less often disturbed. If the infant is encouraged to start up at any moment of the day or night, and demand the breast, or if the latter is constantly offered to it as a means of soothing its cries, whether it be hungry or not, perpetual restlessness and discontent must be the result; and these once established as a habit, the mother's peace and enjoyment, and the child's health and welfare, are sure to be sacrificed. The infant may be quieted for the moment in this way, but it will be at the expense of tenfold trouble and disappointment at a future

time.

An infant should, on no occasion, be subjected to any degree of harshness, either of voice or of manner; it should be invariably addressed in a soft and soothing tone—he surrounded by none but smiling and affectionate countenances, and ever receive at the hands of its attendants the tenderest treatment. Struve objects, very properly, to the constant playful teasing of young children, practised by many persons, and the attempts often made to excite them to activity when they feel inclined to lie quiet, as so many means of rendering them peevish and uncomfortable. Even when the fretfulness of the infant is the result of some accidental irritation, the smiling countenance and tender cares of the mother, and the simple and cheerful songs of the nursery, are the means best adapted to quell it. Care must be taken, however, not to mistake an improper indulgence of the whims and caprices of an irritable child, for a proper degree of gentle care and tenderness. These should invariably be opposed, and by a little gentle firmness may very quickly be subdued, whereas, if indirectly given way to, the foundation may be laid for permanent and very serious defects of disposition.

All attempts to prevent or soothe the fretfulness of an infant by

cakes, sweetmeats, and confectionary, should be absolutely prohibited. The child soon acquires a morbid appetite for such things, which is ruinous to its health; and it is often surprising how quickly it learns to cry and fret in order to obtain them. Neither should children, when they happen to fall or receive a slight hurt, or experience disappointment of any kind, be soothed by expressions of extreme pity or sorrow, and be allowed, in order to still their cries, some foolish indulgence. Nothing tends more certainly to encourage a fretful, complaining, and exacting disposition, or to induce violent and long continued paroxysms of crying for the most trivial causes.

A prudent mother, who is herself of an amiable and cheerful disposition, must perform but illy her duties as a nurse, or she would seldom have cause to complain, that her time is wholly occupied during the day, and her rest disturbed at night, by the cries of a fret-

ful infant.

The most perfect mildness, gentleness, and kindness, in the treatment of infants, is all important; not only to prevent their becoming peevish and fretful, and to cherish the germs of those affections, which "growing with their growth, and strengthening with their strength," shall shed o'er every scene of after life their happy influence; but, also, to preserve them from the immediate attacks of disease. The excitability of the nervous system, which is always greater in infants than in adults, is often so excessive, that an unusual sound an angry look—a loud tone of voice—a repellant countenance—a rude shake—even being suddenly awoke from sleep, is sufficient to produce an impression that may immediately bring on a violent attack of convulsions—or of spasm of the glottis; and, if frequently repeated, may eventuate in positive disease of some portion of the brain. Young children are readily excited by trifling causes: and though it is not exactly the emotion of fear that is produced—yet the deep alarm expressed by every feature, the agitation in which every limb is thrown, and the fearful screams, or rather shricks, that are uttered -prove that it is one of too intense a character for the delicate organism of an infant to sustain with impunity. No one who has witnessed the apparent agony and piercing cries of an infant, that has been alarmed at some loud and unusual sound striking upon its ear at some unexpected and perhaps uncouth object suddenly presenting itself before its eyes--or even at the motion made by a strange person of repulsive mein, to take it from the arms of its mother, will be surprised, that from the same cause, should, occasionally, result convulsions, and other forms of violent disease.

Fear of the most intense kind—causing immediate injury to health, and capable of producing a lamentable degree of feebleness of character in after life, is not unfrequently excited and cherished in children, by the reprehensible conduct of parents and nurses, attempting either to render them quiet, or to enforce their obedience to the commands given them, by threatening them with a visit from some object of terror. In not a few instances the intense fear thus engendered in the

mind of the child, has been productive of effects almost immediately fatal. We recollect the case of a female child, repeatedly threatened by her parents to be given to a sweep, that he might carry her away in his bag, who, on accidently encountering a sweep, that had entered the house in the pursuit of his avocation, fell down immediately in a violent fit of convulsions, which terminated fatally in a few hours.

When, by these injudicious practices, the sensation of fear has been deeply engraven on the mind during infancy, it is seldom entirely eradicated in after life. The sensation palsies, to a certain extent, the powers of reason, and produces, under particular circumstances, a deplorable state of mental imbecility; which not only detracts from the comfort of the individual, but lays him open to the inroads of disease. "We are liable to be ruled often by the influence of incidents and impressions that we have forgotten; or, in other words, sensations are subject to revival by association, when the causes which first produced them, are remembered no longer. How studious, therefore, ought those who have the care of children to be, that no impressions be made on their minds, which, as Darwin has observed, may bias their affections, mislead their judgments, or render nugatory their best resolves, to the end of their lives." (Fellowes.)

Parents are often heard to complain of the obstinacy of their infants, and the necessity of severe measures to reduce them to obedience. In a large number of cases, the obstinacy of the child is either imaginary, or the result of the parent's own mismanagement; and the severe means used to conquer it, in many cases tend to confirm it, while they act prejudicially upon the health of the little sufferer. The young infant is often reputed obstinate, because it cannot conform its wants to the convenience or the caprice of its parents; because it will not close its eyes in sleep at their desire—refrain from crying for food when it is hungry, and the mother is not ready to attend to its wants-or, when it begins to prattle, articulate sounds at her command, to the pronunciation of which its organs of speech are not yet adapted. When the child is somewhat older, it is, perhaps, commanded to remain within doors, and sit still and study his lesson, while perhaps the gladsome sounds of his companion's sports strike on his ear, and stimulate his desire to partake of them; or he beholds, from his chamber, their gambols in the neighbouring fields; under such circumstances, he can neither fix his mind upon his book, nor remain quiescent for any length of time, however repeatedly he may be commanded to do The child in this instance evinces neither obstinacy nor disobedience; he is merely following the natural instinct of his age for bodily action; and if an attempt be made to restrain this by punishment, the mind and the temper, as well as the health of the body, equally suffer injury.

The reluctance to stop, when a child is once in motion, is often mistaken for obstinacy: when he is running, singing, laughing, or talking, if he be suddenly commanded to desist, he is unable instantly to obey. The inability to desist suddenly from any occupation, is

often so painful to children, that to avoid that pain, they become obstinate. It is, therefore, better to stop them by presenting new objects to their attention, than by the stimulus of a peremptory voice, or the still more objectionable means of corporeal punishment.

"Be careful," observes Locke, "before punishing a child for obstinacy, that his fault really arises from wilfulness, and not from childishness, or inability to do what you bid him. Inadvertency, forgetfulness, unsteadiness, and wandering of thought, are the natural faults of childhood, and, therefore, where they are not observed to be wilful,

are to be mentioned softly and gained upon by time."

Children, if properly trained from their birth, are far more docile than the generality of parents are inclined to believe. If, unfortunately, they have been suffered to contract a disposition to obstinacy, this may be readily corrected by great kindness, and a little patience and good temper, on the part of parents and instructors; whereas, to attempt to command obedience by severe measures, will often confirm and strengthen the very fault for the correction of which they are resorted to.

"Children, at a very early age, can distinguish between what is reasonable, or unjust, in our behaviour towards them. They should, therefore, be treated as rational creatures, and be made sensible, by the mildness of our carriage, and the composure even in our correction of them, that what is done is reasonable in us, and useful and necessary for them; and that it is not out of caprice, passion, or fancy, that they are commanded, or forbid, any thing. This, they are capable of understanding; and there is no virtue they should be exacted to perform, nor fault they should be kept from, which I do not think they may be convinced of; but it must be by such reasons as their age and understanding are capable of, and those proposed in

a very few and plain words." (Locke.)

Among the emotions most readily excited into action in childhood and often displayed to a most fearful extent, even before the tongue can lisp a syllable—is that of anger. Nothing is more common than to witness an infant break forth in violent paroxysms of rage, when in the slightest degree controlled in its actions, or subjected to the least disappointment; independently of the direful consequences, which, in after life, may result from this disposition in the infant to passionate excitement; it is, in its immediate effects, in the highest degree prejudicial to health, by determining to the head, an undue amount of blood. Unfortunately, it is, in too many cases, produced solely by gross mismanagement on the part of parents and nurses. An infant, who is made frequently to witness the exhibition of violent passion in those who surround it, or is taught to express its dissatisfaction by menacing gestures—or whose puny fits of displeasure with its attendants or play-things, are encouraged or even excited, can scarcely fail to become angry and resentful at whatever opposes its desires, or gives it momentary uneasiness; and the emotions, thus brought into play,

acquire, in a short time, a force, which the best directed efforts seldom

succeed in effectually counteracting.

Crying, screaming, and various gesticulations of the limbs and body, are the means by which the passion of anger, and other violent emotions, are generally expressed in infancy. Children, it is true, frequently cry from pain or uneasiness; while, not unfrequently, particularly at a very early age, their cries would appear to be excited by a kind of instinctive impulse, there being no other cause to which, apparently, they can be referred. Many authors have conceived it to be improper to prevent, in any case, the crying of an infant, unless it proceed from absolute pain or sickness; they believe that, during early infancy, frequent fits of crying are useful, by expanding the chest, developing the lungs, and calling into exercise the muscles of respiration. That, to a certain extent, these effects are produced by the crying of infants, cannot be doubted. But, it is not true, that crying is very common in infants during health, and when they are properly nursed; nor that allowing them frequently to indulge in it, has any salutary effects; on the contrary, when from any cause, whether improper food or elothing, a confined or impure atmosphere, neglect of cleanliness, pain or passion, an infant is thrown into frequent paroxvsms of crying, particularly when these paroxysms are of long continuance, as is generally the case when they are excited by fear or anger, their effects are often very serious. The undue amount of blood they cause to be determined to the brain, not unfrequently produces an injury of that organ, laying the foundation for dropsy of the head, or giving rise to convulsions of various kinds. "Violent mental emotions, by throwing the heart into inordinate action, and thus pouring extraordinary currents of blood on the delicately organized brain, conduce to the development of hydrocephalus in the predisposed. The neglect or maltreatment of children among the poor, where they are left crying almost to convulsions, for hours together, must lead in many instances, to effusion in the brain." (John-

Hence the importance of guarding an infant from every cause that is capable of exciting these violent paroxysms of crying, by a judicious course of nursing; or, when, unfortunately, they have been excited, of endeavouring quickly to calm them, by walking the infant about; by attracting its attention to some object calculated to amuse

it; by soothing caresses, and the nurse's lullaby.

Two means, however, that are frequently resorted to, to arrest the cries of infants, are strongly to be reprobated. The first is, applying it immediately to the breast, or forcing into its stomach, with the spoon, a quantity of food. "It is a great mistake," observes Combe, "to treat crying as an infallible sign of an empty stomach. No doubt silence is sometimes obtained by the apoplectic oppression of a stomach thus distended, but no sane being will seriously contend that such quiet is really beneficial." The functions of the stomach thus over-

loaded, quiekly become deranged, and severe colic, or even more

serious misehief, is induced.

The other means to which we have alluded, is the use of laudanum, and other nareoties. Independently of the well established fact, that very young children are often peculiarly sensible to the poisonous action of opium, so that it is searcely possible to use the most insignificant dose with safety (Christison), when the use of opiates is once commenced with; there is a strong inducement again and again to resort to them, until the necessity for their almost constant employment, and for the gradual augmentation of the dose in which they are given, is fully established. The frequent administration of opiates to infants, never fails, very speedily, to destroy the powers of the stomach, to retard the growth and development of the body, and to induce a general condition of the system, altogether adverse to the healthful discharge of its functions.

It is not our intention to enter at length into a consideration of the powerful influence which the moral and intellectual education of children may exert, upon the health and well being of both mind and body, according as it is well or ill-conducted. Interesting as the entire subject is, in a hygienic point of view, an examination of all its important bearings does not come within the scope of the present treatise.

We have already pointed out, when speaking of the importance of daily exercise, during the period of youth, the injury resulting from too early an attempt to bring into action the purely intellectual powers. Devoting the mind in early youth to close and intense study, is pronounced by Struve, to be "a positive crime against nature." The intellectual powers can be developed prematurely, only at the expense of health, and of that cheerfulness of disposition, that happy buoyancy of temper, which, when extinguished by any cause in youth, is but rarely regained subsequently. Even the mind itself, when taxed beyond its powers, by too early and ill-directed efforts to educate it, is deprived of much of that capacity for depth and vigour of reflection, to which it might have attained under a more rational system of training.

Even such children as early display a peculiar aptitude for learning,—a propensity to inquire, and to reflect upon subjects of inquiry, should not, from a proper regard for their health and well being, be devoted to study at a much earlier age than others,—even though they may delight in it, find no difficulty in their tasks, and rapidly acquire knowledge. Struve, with much good sense, recommends, that in regard to these children in particular, the very opposite plan should be pursued; for, he remarks, the early maturity of mind they exhibit, certainly borders on disease. Hence it would be prudent even to check, judiciously, so forward a pupil, to abridge his school hours,

and to employ him more with bodily than mental exercise.

Perhaps the most advisable eourse, in all eases, would be, to make no positive attempts at cultivating the intellectual powers of children previous to the fourth year. Let them rejoice, till then, in their existence, without confining their limbs, damping their spirits, or burden-

ing their memories with things, which are seldom more than loosely

connected and arranged in the recesses of their minds.

There is, however, an important branch of education, which, according as it is wisely or unwisely directed and controlled, exerts a most powerful influence over the character, happiness, welfare, usefulness, and, to a certain extent, over the health of every human being, and which commences the moment the child is able to form even the simplest ideas; it is the education of circumstances—of examples; insensible education, as a popular writer correctly terms it; the results of which, like those of the insensible operations going on in the physical world, are often more striking, and more permanent, than of such as are open and apparent. To this education every thing contributes by which the child is surrounded,—the example, the conversation, the manners, the opinions, the prejudices of his parents, and of those in whose society he is brought, or accidentally falls,—the sentiments he hears expressed while playing unnoticed in the corner of a room, the conduct of his parents and seniors towards himself as well as towards others. From these influences, it is not in the power of parents, even were it advisable, to withdraw their children; but it is in their power to surround them with such influences, only, as are calculated to give to the mind in early life that proper moral bias, which no light temptation, in their future intercourse with the world, will be able to destroy. "Although," remarks Madame de Genlis, "many of the most hor-

"Although," remarks Madame de Genlis, "many of the most horrid vices might be witnessed by a child, without the least danger, from his inability to understand them, yet, trifles, such as almost escape our observation, will often pervert his unformed judgment, and deprave his heart. Circumstances, which we considered the least important, may, in the mind of a child, two or three years old, sow the seeds of

cruelty, injustice, and other vices."

On the other hand, nothing is more easy, by presenting always before them, in the conduct and conversation of their parents, and those with whom they constantly or occasionally associate, none but good examples—and by taking advantage of every little incident and casual occurrence, to connect the practice of the virtues with the vivacity of pleasurable sensation,—to render truth, fidelity, benevolence, generosity, firmness, and strict integrity, dispositions essential to the mind; principles interwoven with its constitution, and habits it

spontaneously indulges.

What idea can we have of a father, who being himself guilty of swearing, punishes his son for that vice; or who preaching up temperance, is himself intemperate. This holds in all actions, however inconsiderable, as we know that children ape and mimic those with whom they converse. It is in vain to tell them, such things are allowable in grown persons, but unbecoming in children; as vice will only thus be placed in a more engaging point of view, and the great opinion they form of grown-up persons, make them wish to be soon able to resemble them. But, can it be imagined, that there are any parents who take delight in the vices of their children, and train them up in them?

and yet without their desiring to do it, nothing is more certain. A child scarcely begins to lisp, than he repeats the abusive language he hears from his parents or others, which, too frequently, is not only approved but encouraged, from the supposition that there can be no harm in a child repeating words, the import of which he cannot understand; and then it is so comical and diverting in him! But the child perceives, full well, the nature of the feeling which gives birth to the words, and soon learns to employ them to express his own rage or displeasure; and the language he lisped in infancy, he will, in future

years, habitually utter.

The same thing is true in innumerable other particulars. A child, for instance, begins to cry; to pacify him a stick is offered him to beat the naughty stool or stone that made him stumble; with this, perhaps, the child is quieted; but thence he instinctively acquires the disposition to revenge himself on whatever gives him uneasiness or inconvenience, whether things or persons; and thus the desire of revenge is so deeply implanted in his mind, as scarcely ever after to be entirely eradicated. This is equally true of other vices, as idleness, negligence, prodigality, cruelty, &c., when practiced or countenanced by parents in the presence of their children; who thus, in fact, while truly wishing them to do well, by their own example implant in their offspring the seeds of every vice.

The perceptive, are the first of the intellectual faculties that become active, and they are, in many cases, exercised at a surprisingly early period. The infant, in the nursery, is often a very quick, if not always a very accurate observer. By taking advantage of this observing and inquisitive disposition of children, and carefully directing it to familiar natural objects and phenomena, with a short and simple explanation of their leading qualities or causes, they may be made to acquire, almost imperceptibly, a vast amount of useful knowledge, at an age when any direct application of the mind to study would be prejudicial.

In this manner, the powers of the intellect become gradually developed, and the child soon acquires the power of comparing and assorting his ideas; of referring effects to causes, and distinguishing truth from error; and, by rendering him familiar with the beauty, order, and harmony of nature, and the wisdom and beneficence exhibited in all its operations, his moral faculties, equally with his intellectual, are cultivated and improved. This kind of mental culture, is effected without confinement, or in any degree detracting from the exercise of the body; it allures the pupil forth into the open air, "amid the garden's cultured walks; o'er grassy fields, along the river's brink; amid the silence of the forest's shade; upon the hill side, or by old ocean's shore," where every object elicits attention; and while it amuses, it excites the mind to reflection, and the better prepares it for future intellectual attainments.

It is, indeed, to be regretted, that so small a portion of the education of youth is devoted to the acquisition of knowledge from personal observation. The perceptive faculties are thus in a great

measure neglected, and the erudition of books, even in the acquisition of the natural sciences, is made to supplant the more exact, vivid, and permanent impressions derived through their medium; on every subject of knowledge, the mind receives a foreign impression,—it is made to learn by the observations of others, rather than by original reflection, and to receive upon the authority of books, what it should admit only in consequence of previous self-conviction,—its own original powers of acquisition being sacrificed at the shrine of authority.

CHAPTER II.

OF THE PECULIARITIES OF ORGANIZATION AND FUNCTION DURING INFANCY AND CHILDHOOD.

An acquaintance with the physiolgical condition of the different portions of the body, and the successive and rapid changes which they undergo, in organization and function, from the period of birth until that of puberty, is essential to a correct understanding of the pathology and therapeutics of infancy and childhood. It is upon the physiological condition of the several tissues and organs—their successive development and relative activity—that the predisposition to particular forms of morbid action, as well as the various modifications which the phenomena, march, and terminations of disease exhibit, in the carlier stages of existence, are to be attributed, and to which also reference is to be had, to a certain extent at least, in the choice of the therapeutical

agents which are then employed.

At the moment when the human being emerges from the womb, and enters upon the enjoyment of a separate state of existence, it presents physiological as well as physical characters, which it preserves during a certain period, altogether distinct from those which are proper to it in the subsequent periods of life. All of the organs are imperfectly developed, while many of them are, as yet, merely rudimental, and the whole of the functions are confined, almost exclusively, to those of nutrition. By degrees, however, the different parts of the system become more perfectly organized; the body increases in size, and exhibits an augmentation of strength and vigour; organ after organ becomes successively developed, and enjoys for a time a predominance of activity; the number and extent of the vital phenomena are thus increased, until, finally, the entire organism is adapted to the active and regular performance of all its functions.

During the whole period of infancy, the activity of the digestive and nutritive functions, the great and rapid change of material which the different organs experience, and the consequent demand for a constant supply of appropriate nourishment, render, under the influence of various disturbing circumtances, the occurrence of errors of nutrition, or of disease dependent upon deficient or improper food, of frequent occurrence. The great size and vascularity of the brain, also, the extreme delicacy and excitability of the skin and mucous membranes, and the great development of the whole lymphatic system, cause these parts, more frequently than others, to be the seat of serious and extensive disease. Their susceptibility to morbid impressions being still more increased somewhat later by the process of dentition. The rapid development of the brain, and the activity of many of its functions, as well as the simultaneous changes going on in the intestinal mucous membrane, as the teeth make their appearance, render both, at this particular period, especially prone to disease from slight causes.

The excessive nervous excitability of the infant gives to its discases a peculiar character of mobility—that is to say, morbidirritations occurring in one organ are quickly reflected upon others, and from the great vascularity of every part, especially the abundance of arterial capillaries with which all are supplied, during the progress of rapid growth, sympathetic irritations become quickly converted into

organic disease.

While the condition of the several organs, in the stages of infancy and youth, renders them thus prone to take on particular grades of morbid action, it, to a certain extent, modifies the action upon them of the various remedial agents; nearly all of these acting with increased energy at this period of life, and requiring to be administered in diminished doses, graduated by the particular age of the patient. Some remedies have, also, a peculiarity of action, different from that produced in the adult, while the action of others is more or less prejudicial. But it is unnecessary, in this place, to extend further our remarks on this subject; we shall have frequently to recur to it in subsequent portions of the treatise.

1.—Infancy.

The age of infancy extends, agreeably to the division we shall adopt, and which corresponds with that of Müller, from the period of birth to the commencement of the second dentition, or, generally speaking, until the end of the sixth year. According to M. Halle, this period of life includes three distinct physiological epochs: The first, extending from birth to the commencement of the first year; the second, comprehending the period occupied in the process of dentition; and the third, extending to the appearance of the permanent teeth.

Organization.—At birth, as already remarked, the entire organism is but imperfectly developed. The body measures from seventeen to twenty-one inches in length, and in weight, varies, agreeably to the repeated observations of Professor Chaussier, from six to nine pounds. The skin is of an extreme delicacy, and of a more or less deep red

colour. It is, also, more vascular, and more freely supplied with nerves than in after life. At the end of a few weeks, it loses its deep red tint, changing, by degrees, to a dirty yellow, and finally assuming a degree of whiteness which it seldom retains in after life. According to Billard, it is not until towards the end of the third month, that the distinct colour of the skin becomes established, and we can distinguish dark complexioned children from those that are fair. At a much earlier period, the hair has assumed its proper hue, but it is only at the third month that the skin on the body becomes dark or light colured, the face either pale or ruddy, and the traits peculiar to each constitution are delineated.

A few days after birth the epidermis commences to exfoliate, and by the fortieth day is usually separated from the whole surface in the form of scales or fine powder. During the entire period of infancy, the skin exhibits great irritability, and is very liberally supplied with blood. The articulations retain, for a short time after birth, a semiflexed condition, and the whole trunk a forward

curvature.

changed.

The limbs of the infant are round, smooth and plump, as well as all the prominent parts on the exterior of the body. This arises from the large amount of fat, and of soft cellular tissue filled with serum, which are interposed between the skin and muscles. As infancy advances, the fat diminishes, and the cellular tissue becomes more dense, while the exudation into its areola is lessened; the outlines of the muscles are, in consequence, rendered more apparent, and the form of the limbs and trunk, especially in males, is somewhat

The head and abdomen of the young infant are of a bulk disproportionately large, compared with that of the rest of the body. The pelvis is small and contracted, and the inferior limbs have a much less degree of development than the superior; the median point of the body is at the umbilicus, or a line or two below it. Several months elapse before the lower limbs acquire a size proportionate to that of the other parts. The thorax is small, flattened at its sides, but somewhat prominent anteriorly. All the tissues abound in lymph, and the lymphatic vessels and glands have a development and activity far superior to what they possess in after life.

In the early period of infancy, the bones are small, red, and deficient in earthy matter, being still, in a great measure, cartilaginous; the central cavity of the long bones can scarcely be said to exist, and the sinuses in those of the head are not at all, or but imperfectly, developed. The bones of the skull and the ribs are, however, much more advanced in ossification than those destined for muscular attach-

ment or locomotion.

The muscles are at first soft, pale, and gelatinous; they contain but a small amount of fibrine, and, in common with all the soft parts, are destitute of firmness. They are slender in shape; their fibres are oosely united, the fasiculi not being embraced by fasciæ or aponeuroses.

The digestive organs, though less perfectly organized in the early period of infancy than they subsequently become, are, nevertheless, in a condition adapted to produce rapid changes in the aliment introduced into them, and thus afford a constant supply of materials for

the nutrition of the system.

The mouth, with the exception of the teeth, is fully formed, and, by the disposition of the lips and palate, and the obliquity of the posterior nares, is especially adapted for the performance of its proper office of suction. The mucous membrane, throughout the whole tract of the alimentary canal, is thick, soft and villous—more plentifully covered with mucus, as well as more sensitive and vascular, than in after life. In the stomach, duodenum, and jejunum, it is of a bright rosy tint, but somewhat paler in the ileon and remaining intestines; it often exhibits

large patches of a yellow hue, owing probably to the bile.

When all the liquid parts of the intestinal tube, in early infancy, are removed, there will still remain a layer of thick mucus, adhering closely to the internal surface of the canal, forming on it a kind of plastering. It may be raised by the nail, under the form of a pellicle, resembling, to a superficial observer, portions of the mucous membrane itself. This layer never remains but for a short time, detaching itself by a kind of natural exfoliation. This exfoliation occurs in very thin laminæ, which, being rolled together, form the small, white flocculi, so frequently met with in the stools of young children. When the surface of the duodenum or jejunum is coloured with bile, the removal of this layer of mucus removes also the yellow stain. (Billard.)

In the infant, the stomach is much more conical than that of the adult; the entrance of the esophagus is situated at the left extremity, some distance from the pylorus. The short curvature is comparatively long, and the large curvature but little developed. It is, probably, in consequence of this form of the stomach, that vomiting is so frequent and easy in the infant. The stomach is placed in an almost perpendicular direction, extending from the epigastrium to the umbilicus, in place of transversely, as in the adult. The omentum is peculiarly

delicate, and almost entirely devoid of fat.

The small intestines in the infant, are nearly one-third longer, in proportion to the length of the whole tract, than in the adult, and the large intestines are longer in proportion to the small, but their calibre is relatively less. The valvulæ conniventes are scarcely apparent; some separate mucous follicles, about the size of a pin's head, and of a white colour, often exist in the jejunum; and in the ileon, some follicular plexuses, white and projecting, and often with a slight black point on the top, as in the adult. The cœcum is largely developed, and the vermiform process very long. The ileo-cœcal valve slightly projects, while the opening it surrounds is so extremely small, that, in most infants, it would be difficult to pass through it even a crow quill.

At this age it prevents the regurgitation of substances, and even gas, from the large into the small intestines, but allows a free passage for the contents of the small intestines into the large. (Billard.) The depressions and prominences of the cocum and colon are less marked in the infant than in after life. The lacteal vessels, and mesenteric

glands, are largely developed.

In the infant the liver has a bulk greatly disproportionate to the residue of the abdominal organs; at birth, it fills nearly one-third of the abdominal cavity, descending even to the crest of the ilium; but with the change in its circulation, caused by the obliteration of the ductus venosus, and the development of the portal vein, its bulk diminishes, by a reduction, especially, in the size of the left lobe. The gall bladder is small at birth, but soon enlarges; it contains bile of a green colour, but less viscid, and containing less of its peculiar principles, than at a more advanced age. The spleen is small in size, but presenting no apparent difference from its usual structure in the adult; it can be distinctly felt in the infant, under the short ribs, towards the centre of the abdomen.

The pancreas and kidneys are large; the lobular structure of the latter quickly disappears, and the supra-renal capsules, which are at first of considerable size, rapidly diminish. The urinary bladder is small, having a more elongated shape than in the adult, and is placed rather above than within the pelvis. The pouch, or fundus of the bladder, is but imperfectly developed, and the cervix is much more dependent than in the adult, which may account for the frequent discharges, and the

difficulty of retaining the urine, in infants.

The respiratory organs are well developed in the infant. At the period of birth, the cartilages and bones, as well as the muscles of the larynx, are perfectly formed, though very small and flexible. The cartilages of the trachea are perfectly distinct from each other, but soft, and filled with blood. The mucous membrane of these parts is soft, thick, very vascular, and abundantly supplied with mucus. The dimensions of the larynx and glottis are very small at birth, and remain so during the greater part of childhood, differing but little in size in a child of three or four and one of twelve years. It is this which, in young children, renders all diseases of these parts that are attended with exudation upon, or tumefaction of their mucous membrane, so eminently dangerous, from the complete closure of the glottis that then takes place. The bronchii are perfectly formed, but small, in the infant; they, however, quickly acquire a greater development.

The dimensions of the thorax are proportionably less than those of the other eavities, at birth, and for some time afterwards. The lungs, which in the fœtus were small, dense, and of a brownish colour, expand immediately after birth, to double their former bulk, and become soft, crepitant, and of a rosy hue. Though of less specific gravity than in the fœtal state, in consequence of the air which pervades their cells, yet their absolute weight, from the greater amount of blood

transmitted to them, is doubled.

The chest of the infantupon percussion is very sonorous; chiefly from the thinness of the parieties, and the freedom with which the air permeates the bronchii and air cells. The thymus gland, which exists at birth, continues to grow after birth, and remains of considerable size during the first year, after which it usually gradually diminishes, and, in many instances, disappears about the period of puberty.

The organs of circulation are fully developed at birth, but during the early period of infancy present several remarkable peculiarities, The volume of the heart is proportionably large; its muscular structure is soft, and of a paler colour than in after life, and of nearly equal thickness throughout. The capacity of the left ventricle, and of the principal arterial trunks, is greater than that of the right ventricle and of the large venous trunks. The colour of the cavities, on the two sides of the heart, as well as of their respective vessels, likewise differs—those of the right being usually of a deep violet, while those of the left are red. After the closure of the foramen ovale, and the obliteration of the ductus arteriosus, the parieties of the left ventricle, which then becomes charged with the propulsion of the blood throughout the body, rapidly increase in thickness, while, at the same time, the right ventricle acquires a capacity which exceeds considerably that of the left. Every portion of the body, during infancy, is more plentifully supplied with arteries than in after life; the capillary system is much more expanded, and every organ and tissue is more fully permeated with red blood; nor is it until the stage of active growth is passed, that extreme vascularity ceases, and the venous radicles and veins begin to assume their preponderance.

The blood of the infant contains a much less amount of fibrine and phosphate of lime, than that of the adult, and a much larger propor-

tion of albuminous matter and water.

During infancy the brain is large in size, and nearly resembles, in its general form, that of the adult. It is of a soft, paste-like consistence, and soon softens, when in contact with the air; it is of a whitish colour, the medullary and cineritious portions, being scarcely distinguishable—the situation of the latter, being merely indicated by a line, less coloured than the central substance, winding over the superfices of the cerebrum, throughout its convolutions: in the cerebellum, though the two portions are less marked than in the adult, they are, nevertheless, more so than in the cerebrum. The medullary substance of the brain is generally of a reddish colour in the infant, having a number of blood vessels ramifying through it. Its convolutions are less prominent, and apparently less numerous, than in after The cerebellum, as well as the medulla oblongata, are more advanced in organization, than the other portions of the brain. dura mater is thinner, and its adhesions are less firm, than in the adult, and, in common with the pia mater, is more vascular. The latter, where it envelopes the medulla, is more dense and cellular than upon the brain. The connection of the tunica arachnoidea with the brain, is less intimate than is the case in after life.

amount of fluid also exists between the membranes, and in the ventricles.

As the infant advances in age, the organization of the various portions of the brain becomes more perfect. Between the ninth and twelfth months, the cineritious portion becomes more fully developed, and assumes, after passing through various gradations of colour, the reddish grey by which it is distinguished in the adult; the medullary portion assumes a firmer consistence; the convolutions are more defined and prominent; the peripheral surface of the brain is more extensive, and at the same time the cerebrum augments in size, causing a very marked change, in the form of the head, by the increased development of the anterior regions of the scull.

To accommodate the rapid growth of the brain, during the early period of infancy, the bones of which the scull is composed, are imperfectly organized, and but loosely connected to each other; the angles of those especially which composed the vault of the cranium, are entirely wanting, the deficiency being supplied by a dense membrane, forming the openings or spaces denominated fontenelles. These gradually close, as the ossification of the bones becomes perfected, and, generally, between the fourth and sixth years the sutures

are all firmly united.

In the infant, the medulla spinalis is white, its cineritious centre being well defined, but of a brighter colour, and softer consistency than in the adult. The two latteral cords of which it is composed, may be unrolled with great ease. Behind the dura mater, there exists a thick layer of cellular tissue, which, in young infants, is infiltrated with a yellow serosity, the consistence of which is sometimes gelatinous.—(Billard) The net work of spinal veins, is, in the infant, almost always engorged with blood. The annular portions of the vertibræ which form the canal for the spinal marrow, are fully ossified at birth, while the bodies of these bones, upon which the weight of the body is sustained in after life, are but slightly expanded and cartilaginous, and the processes for muscular attachment, have little prominence or solidity.

The nerves of organic life are those most perfectly developed in the infant. The ganglionic, or great sympathetic, presents, indeed, nearly the same proportions, and perfection of organization, as in the adult. The nerves of sensation and of motion, as well as the special nerves of sense, appear fully formed at birth; but in the early period of infancy, they exhibit but imperfectly, their appropriate functions; less, however, we suspect, from their incapacity to convey the impressions made upon them, than from the imperfect condition of the portions of the nervous centres with which these nerves are imme-

diately connected.

The organs of the external senses, are all present at birth, and the nerves distributed to them are large. The eye presents no appreciable difference in structure, from that of the adult. The tympanum of the ear, is small, its membrane oblique, and the internal structure of the

ear is but imperfectly developed. The nose is small, and the nassal fossæ are either wanting, or imperfectly developed. The larynx is very small, both in depth and diameter, and presents no protuberance at the anterior part of the neck.

The genital organs of both sexes, are fully formed in the infant, though small in size. The clitoris and nymphæ of the female are often, however, disproportionately large, in comparison with the other

parts.

Until the termination of the first period of infancy, the general organization and appearance of the body undergo but little change. The infant, however, gradually increases in size and weight. The head, though still voluminous, diminishes in the relative size it bears to the rest of the body; while the pelvis expands, and the inferior extremities become longer, and more fully developed. The softness of the tissues diminishes gradually, and they acquire a greater degree of density. The fat and serosity become reduced in quantity, and although the temperament is still decidedly lymphatic, the predominance of the white fluids over the blood diminishes, as the termination of infancy approaches.

The bones lose by degrees their cartilaginous form, by the constant progress of ossification. The central canal of the long bones, and the sinuses and other cavities of those of the face and head, become more fully developed. The articulations acquire greater firmness, and those of the extremities augment in bulk. The muscles lose, by degrees, their gelatinous character, become more fibrinous, augment in bulk and density, and acquire more and more of the deep red colour which distinguishes them in after life. The aponeurotic sheaths, and tendinous appendages, become more and more fully

developed.

During the entire period of infancy, the digestive and nutritive organs maintain their predominance. From the first month, the jaws gradually expand; and between the sixth and seventh months, the first teeth make their appearance, and by the end of the second year when the first dentition is completed, each jaw contains ten. These teeth, which have received the popular denomination of milk teeth, are retained until about the seventh year, when the second dentition commences; and the permanent teeth successively make their appearance to the number of twenty-eight. When dentition commences, the salivary glands, which were previously but slightly developed, augment considerably in bulk, and furnish an abundant secretion. During the progress of dentition, the mucous follicles, and glands of the stomach, become developed, and by the termination of the first year, the several portions of the digestive apparatus have acquired, very nearly, their complete organization, and differ but little from those of the adult. The disproportion in the size of the liver, especially of its middle lobe, decreases gradually; it recedes more towards the ribs, and its parenchyma becomes of a darker colour. The gall bladder augments in capacity, and the urinary bladder assumes more of an ovoid form, and sinks lower into the

pelvis. The lungs gradually develope themselves, but still preserve their great vascularity, their redness of colour, the smallness of their cells, and a degree of density, greater than they present in after life.

The heart becomes, in the progress of infancy, gradually changed in its form, volume, and in the relative capacity of the cavities and thickness of the parieties of its two sides, until, finally, it assumes all the

characteristics of the adult heart.

The foramen ovale and ductus arteriosus, usually become obliterated on or before the tenth day after birth—the first remaining longer patulous than the last. During the entire period of infancy, the predominance of the arteries over the veins, and the extent of the capillary sytem is but little changed. The blood, however, towards the close of this period, presents an augmented amount of fibrine, and approximates more nearly in its composition to that of the adult.

The disproportionate size of the brain diminishes—it increases in consistency, its convolutions become more apparent, its colour less red; the proportion of its medullary matter is increased, its cortical portion is more distinctly marked, the bulk of the whole of the cerebrum is increased, and by the termination of infancy it is found to have acquired, very nearly, that form and organization which it

retains during the remainder of life.

With the growth of the body in height, there is a corresponding elongation of the spinal marrow, which at the same time increases in bulk, and acquires, gradually, a more perfect organization; but from the early period at which it exhibits a perfectness of development beyond that of the brain, the changes which take place in it are less extensive and striking.

During infancy, but little apparent change takes place in the organs of hearing, of sight, and of taste; the cavities of the nose, as well as of the mouth, however, become more developed, and the sense of smelling, and probably that of taste, more acute and discriminating.

The organs of generation undergo but little, if any, important

change, until towards the age of puberty.

The growth of the body and its increase in height, weight and strength, are modified in some degree by sex, while its ratio of increase differs at the different stages of life. According to M. Quetelet, who has investigated this subject with great care, the weight of the male infant at birth, is about half a pound greater than that of the female, and the length about an inch. The annual growth of the first, is greater than that of the last, while the progress of development is reversed. Immediately subsequent to birth, the weight of the infant diminishes, and does not begin sensibly to augment until the second week. The increase in stature is more rapid during the first twelve months, being nearly eight inches; it is less rapid as the infant approaches its fourth or fifth year, diminishing, apparently, in direct ratio to the age, up to that period. The growth in the second year being half that of the first; in the third only one-third; but subsequently it goes on in a tolerably regular progression.

Functions. Immediately after birth, the function of respiration

commences. The lungs and chest dilate, and the external air rushes into, and distends the pulmonary cells, while the closure of the communication, which in the fœtus exists between the two auricles of the heart, the obliteration of the umbilical vessels, and of the arterial and venous canals, a few days subsequently, cause the whole of the blood received by the right side of the heart, to pass through the lungs, in order to become there arterialized by its contact with the atmospheric air. From this period, the arterial and venous blood circulate, each in its distinct set of vessels. Respiration once established, continues without interruption as in the adult; it is, however, more frequent; being, during the first year, from 35 to 40 in the minute, or nearly double that of the adult; it is accomplished almost entirely by the intercostal muscles. Examined by the stethescope, it is found to be louder, also, than in after life, as though the bronchial ramifications experienced a greater degree of dilatation, and received a proportionately greater amount of air. This peculiarity continues until about the twelfth year, when respiration assumes the same characters as in the adult. Infants, during the period of sucking, respire entirely by the nose, which is then to be considered as an important part of the respiratory system. Notwithstanding the activity of the process of respiration, it would appear, however, that a less amount of oxygen is consumed by the infant than in after life. With the advance of infancy, respiration becomes gradually slower and the amount of oxygen consumed greater.

The circulation, which in the infant is accomplished in the same manner as in the adult, is much quicker and more rapid. The pulse of the infant, is, in consequence, more quick and frequent, beating one hundred strokes, or upwards, in a minute. It gradually decreases,

however, with the approach of youth.*

M. Valleix, as the result of his examinations, states, the pulse from 2 to 21 days to amount to 87; at 11 months, 129; at 14 months, 125; and at 20 months, 117. De l'Auscultation.

Dr. Hohl states, from his observations, that at birth the pulse varies from 100 to 156; 24 hours after birth, from 100 to 150; 36 hours after birth, from 110 to 154; 48 hours after birth, 108 to 146; 72 hours, 108 to 140; 5 days, 108 to 170. Die Geburtshülfliche exploration. Halle, 1833.

Dr. Gorham, gives 130 as the mean number of pulsations from the fifth month, to the second year, and 107 from the second to the fourth year; from which time until the tenth

year, he observed but little variation to occur.-Med. Gazette, 1837.

M. Billard states, that from his observations, "it appears that the pulse of a very young infant, is often not much more frequent than that of an adult, but it increases in frequency in proportion as the child advances in age; whence it follows, that it is wrong to assert, in a manner so exclusive and general as is usually done, that the pulse in children is more

^{*} The following statement of the number of pulsations during infancy and childhood, is given by Muller.

Soon after birth, digestion commences, and during the entire period of infancy is peculiarly active, demanding an almost constant supply of the food, furnished by nature in the breast milk of the mother. This food, which is the only kind adapted to the peculiar condition of the digestive organs in the earlier months of existence, increasing in consistency, as the energies of the stomach become more developed, is fully adequate for the support of the system, until the commencement of the first dentition, when a more substantial aliment would seem to be required. The appearance of the teeth, the augmented size, and greater activity of the salivary glands, and the increased bulk of the muscles subservient to mastication, enable the infant, after the first year, to partake of solid food, which the stomach then digests with facility.

The whole of the functions concerned in the nutrition of the system, are equally active with those of digestion. The process of assimilation predominates considerably over that of decomposition, as is evinced by the constant growth of the body, and the rapid develop-

ment of the majority of the more important organs.

The discharges from the bowels are frequent, and passed almost involuntarily. In the earlier period of infancy, they differ from those in after life, by their lighter colour, their curdy appearance, and by the absence of any decided feetor. After the first year, they become less frequent, darker coloured, and exhale a stronger odour. They are then, also, more under the command of the will.

The urinary secretion is in full activity at birth; but the urine is at first pale and watery, and scarcely contains any of those peculiar principles which distinguish it in after life. The benzoic acid exists in a larger amount, generally, in the urine of infants, than in that of

adults.

The exhalent function of the skin, is extremely active during this age, and from this circumstance, and the great excitability of the dermoid texture, it is readily augmented by a slight stimulation, and

as readily checked by a trifling diminution of temperature.

Calorification is at first feeble, the heat of the body in young infants being, according to the investigation of Edwards, and later observers, several degrees less than in the subsequent periods of life. For several months after birth the infant suffers severely from the influence of a cold atmosphere, and the proper temperature of its surface can be maintained only by sufficient clothing, and other artificial means. By degrees, however, the process of calorification

frequent than in adults." It appears to him to be clearly demonstrated, that this rule has many exceptions.—Diseases of Infants.

The foregoing statements show how little reliance is to be placed upon the pulse as a sign of disease in infants.

According to the observations of M. Trousseau, during the first two weeks, the pulse may vary from 78 to 150; during the second two weeks, from 120 to 164; one to two months, from 96 to 132; two to six months, 100 to 162; six to twelve months, 100 to 160; twelve to twenty-one months, 96 to 140.

acquires a greater degree of energy, and the body becomes less sensible

to the influence of atmospherical vicissitudes.

The functions of relation commence at birth, and are rapidly developed during infancy, but do not attain their utmost perfection until a subsequent age. The moment the infant emerges from the womb, it commences to cry, and to move its body and its limbs in different directions. It will grasp at any objects in its immediate vicinity, and sometimes seizing them mechanically, will even carry them to its mouth. If the breast be now presented to it, it will grasp the nipple with its lips, and instinctively perform the complicated movements of the mouth and tongue required in the act of sucking.

It is difficult to decide upon the actual cause which prompts the first cries of the infant, and the agitation into which its limbs are thrown. They would appear, however, to be, in some measure at least, occasioned by the uneasy sensations to which the sudden entrance upon a new state of existence gives rise. The muscular movements observed in the new-born infant are evidently purely

automatic in their character.

In proportion as the infant advances in age, it exercises the arms and hands by reaching towards the objects which are within its grasp; and it is soon found to avoid such as are not agreeable, and to be attracted by those which afford pleasure. We often see very young infants seize with eagerness a finger or coral presented to their notice. Almost all will place the hand in that of the nurse; or, introducing one or more fingers into the mouth, occupy themselves with sucking.

During the few first weeks of life, the external senses are but slightly developed; the infant is, nevertheless, sensible to the impression of cold, and experiences pain when the skin is irritated or wounded: very soon, however, the existence of the sense of touch is manifested. The sense of taste is, also, exercised very early: that of smell, however, is but imperfectly developed until a later period, in consequence of the incomplete state of the nasal cavities, and the lim-

ited extent of the Schneiderian membrane.

It is not until about the third or fourth week that any indication is presented of the exercise of sight or hearing; but subsequently to this period they speedily acquire their full development. Vividly illuminated objects, it is certain, very soon attract the infant, but it is evident, that the eyes are merely directed to them at first passively. Light would appear to be at all times pleasing to the infant, which seems naturally to dislike darkness; but a very bright light is annoying, as well as injurious, to the eye at this period.

Hunger and thirst, and the instinctive desire for the constant admission of fresh air into the lungs, are among the internal sensations which are first experienced: they have, during infancy, the same general

characters which they exhibit in after life.

Those sensations which prompt to the exercise of the voluntary muscles, and probably those connected with the evacuation of the bowels and bladder, are experienced at a very early period. As infancy advances, the first of these sensations is more intense, perhaps, than in the after ages of existence. So soon, indeed, as the muscles become sufficiently developed, and the locomotive organs generally, have acquired adequate strength and vigour, the infant, during its waking hours, is in almost constant motion;—indeed, while in health, a state of inaction, for a single instant, would appear to be to it one of

actual suffering.

The motions of the arms are those first brought into exercise; to these succeed those of the head, which, at first tottering, now becomes fixed upon the neck. In proportion as the faculty of vision is developed, the movements of the head become of a more decided character. At the end of the first month the infant will turn his head on the lap or pillow, to either side upon which a brilliant object is presented. At the age of six weeks he voluntarily fixes his attention upon surrounding objects, and is attracted particularly by a strong light; hence the necessity of preventing the rays of light from falling obliquely upon the face of an infant in the cradle, lest the axis of vision should, in consequence, be made to deviate from the right direction.

At birth, and for several months subsequently, the imperfect ossification of the bones, the disproportionate size of the head, and the smallness and obliquity of the pelvis, the laxity of the articulations, and the imperfect development of the muscles, render the erect posture, and progression impossible. By degrees, however, the inferior extremities acquire an augmented size, the bones become more solid, the articulations firmer, and the spinal column, by the increased ossification of the bodies of the vertebræ, and of the processes for muscular attachment, is better adapted to sustain the weight of the body. At the same time, the muscles become more fibrinous, and augment

in bulk and strength.

Until the sixth or eighth week, the infant has scarcely acquired the power to support its head, but is constantly seen moving it about in an irregular manner, it appearing too heavy for the muscles of the neck to sustain and to direct properly its movements. By the end of the second month, however, he in general becomes able to hold it erect; and in a few weeks later, to support his body with tolerable firmness in the sitting posture. The widening of the hips increasing, the sitting position is constantly becoming more firm and easy; and by the seventh or eighth month the infant is able to place himself in it, and to move his body from right to left, or forwards and backwards, with perfect facility. It is about this period he commences to creep. The firmness and musular power of the lower extremities are next developed; and it is not until about the ninth or tenth month, and often much later, that the infant is able to raise himself upon his feet and to walk; after which period, the motions of the body become daily more firm, prompt and active; the power to assume the several attitudes, and to exercise the various movements of which the human body is capable, is quickly acquired; and, from the very great suppleness of the entire frame, the child pursues with ease and delight all those muscular exercises which require

facility and quickness of motion, rather than strength or skill.

From this view of the gradual and successive development of the different portions of the osseous and muscular systems, will be perceived the importance of the precautions given, in a preceding chapter, to keep the infant in a horizontal position until the muscles have acquired sufficient strength to maintain the head erect; and even after that, to support carefully the trunk of the body, whenever the infant is placed in a sitting posture, until the firmness of the spinal column, and the power of the muscles inserted into it, are adequate to its sustentation; and, finally, to desist from all premature attempts to place the child upon his feet, and from every effort to induce it to walk at too early a period. A neglect of these precautions is often productive of serious inconvenience, and even permanent deformity.

During the few first weeks of existence, the moral and intellectual faculties are entirely wanting. The whole external world appears, in a certain sense, to be, as it were, shut out from the infant; unconscious of existence, it awakes merely to satisfy the instinctive calls for food, and when these are appeased, falls again into a state of repose. A state of sleep would seem, indeed, to be that which is the most natural to it at this period. The little being is only wakeful and restless when suffering from pain, hunger, thirst, or other uneasy sen-

sations.

It is the ganglionic system of nerves which seems to constitute the entire nervous apparatus of the infant at birth, and for some time sub-During a considerable portion of infancy these nerves indeed, preserve a very decided predominance of action; the organic functions being then in greater activity than at any subsequent stage By degrees, as the brain becomes more perfectly organized, and sensibility is rendered more acute and discriminating, the infant gradually emerges from its merely vegetable existence, and exhibits the indication of commencing intelligence; its eye takes cognizance of the objects by which it is surrounded, and, by degrees, learns to distinguish them from each other: its ear, also, becomes sensible to sounds, and discriminates between such as are harsh and repulsive, and those which are soft and pleasing. It soon commences, now, to know its parents or its nurse, and to distinguish them from the other individuals of the family, and these latter from strangers. It manifests desires and will; it experiences affection, aversion, anger, joy, and grief; it becomes capable of laughter and of genuine tears. Infants rarely smile before they are three weeks old—but usually it is not until about the age of one month that an infant really begins to laugh. (Billard.)

About the end of the first year—sometimes sooner—attempts are made at the pronounciation of words, and very soon afterwards the infant is possessed of speech. For some time previously to this period the infant makes known its wants by various expressive gestures of

the face and hands, and by inarticulate sounds, the meaning of which its attendants soon learn to understand.

The articulation of the infant is, at first, very defective, and from the imperfect state of many of the organs of speech, the tones of the infantile voice are weak, shrill, and deficient in modulation; nor do they attain to their full perfection until some time after puberty.

At the end of the first year, the infant passes less time in sleep. Nevertheless, the constant exercise to which the waking hours are devoted, renders still a larger amount of sleep necessary than in the adult; the repose is, also, much more perfect and profound. At this period, the intervals of sleep are very irregular; whenever the senses or the muscles become fatigued, slumber immediately ensues; but, as the age of infancy advances, and the period of wakefulness is prolonged, sleep occurs only at regular periods, and, most generally, on the approach of night, and ceases with the return of light on the ensuing day.

During the entire period of infancy, the nervous susceptibility is particularly acute—all impressions are vividly felt, though usually transient in their effects. Sympathetic affections from reflex action are readily induced, and often give rise to irregular or morbid action from

trifling irritations.

From the end of the first year to the termination of infancy, the development of the intellectual faculties proceeds regularly, and often with great rapidity. The senses soon acquire their utmost degree of activity, and the perceptions become prompt and rapid. The memory has at this period a very great activity and extent—enabling the infant not only to treasure up the ideas excited by the physical and other properties of the thousand objects which surround him, but the words, also, or the names which have been affixed to them, as well as those by which the various sensations and wants, which he himself experiences, are expressed. A knowledge of the prominent qualities of external objects, and of language, is, in fact, acquired almost exclusively, during infancy and childhood.

While the faculties of perception and of language are thus active, those of comparison, reflection, judgment,—the reasoning powers,—are in a great measure absent. It is by instinct, or from present sensations only, that the infant appears to judge and to reason: hence the numerous errors into which he constantly falls, and the necessity of giving, by a proper education, a correct and useful direction to his ideas. From the want of reflection, judgment, and experience, the infant is credulous, docile, and ingenuous:—he is pleased with trifles, and lives, as it were, for the present moment only.

All the affective faculties, if we except those connected with the reproductive instinct, manifest themselves in a striking manner, during the latter stages of infancy, and give rise to their appropriate expressions and gestures. Thus the young being exhibits, from an early period, the feelings of attachment and aversion, of anger, vanity, jealousy, pride and shame; and the frequent and unrestrained indul-

gence of one or the other of these passions, unless a judicious moral culture is early commenced, causes it to obtain a predominance, which will materially affect the character and happiness of the individual in after life.

The higher sentiments, as the sense of justice, and religion, are among the latest to come into operation, requiring some assistance

from the understanding for their direction and support.

2.—Childhood.

The age of childhood commences with the second dentition, and extends to puberty; including, under ordinary circumstances, in this climate, the period of life between the seventh and fourteenth years. It is the second infuncy, according to the division of ages, adopted by M. Halle.

Oganization. At the commencement of childhood, the twenty teeth produced by the first dentition, during infancy, become separated from each other, in consequence of the more perfect development of the maxillary bones, and the increased expansion of the dental arches; and, with the exception of the third molaris in each jaw, become loose and fall out, their place being supplied by the appearance, during the progress of childhood and youth, of twenty-six permanent teeth.

By the enlarged size of the maxillary bones, the face assumes a greater depth and breadth, and the general character of the countenance becomes materially changed. Towards the period of puberty, this change is still further increased, in males, by the appearance, upon the upper lip and chin, of a fine downy hair, which subsequently increases in thickness and coarseness, constituting the beard of the adult.

While the second set of teeth are making their appearance, all the other parts of the body acquire a more perfect development. The lower extremities assume a size and bulk, still more in proportion to those of the upper limbs; and the pelvis, especially in females, becomes deeper and more expanded. The bones become still more completely ossified, and those portions of them which, in the infant, were united by cartilage only, are, during this age, consolidated with the body of the bone. The frontal and maxillary sinuses acquire their full development; the joints their permanent forms, and increased firmness; the permanent cartilages assume a greater degree of density, as well as the various aponeuroses, and ligamentous bands.

The muscles are still small, but fuller, denser, and of greater strengh and activity, than in infancy; in the male, they have also a greater degree of prominence, in consequence of the continued absorption of the sub-cutaneous fat, and the increased density of the cellular membrane. This absorption and condensation does not take place to the same extent in the female, in whom, throughout the greater part of life, the limbs, as well as the other external parts of the body, con-

tinue, in consequence, fuller, rounder, and more plump than in the male.

The thorax acquires, during childhood, a greater degree of expansion, and the air-cells of the lungs augment in size. The dimensions of the larynx are likewise increased; and towards the period of puberty, it presents, in the male, a considerable prominence, at the anterior part of the neek; which, however, is more marked in some subjects than in others. The rima glottidis is also enlarged, and the thyro-

arvtenoid muscles are elongated.

The organization and development of the brain—particularly of the anterior and superior portions of the cerebrum—are gradually perfected during childhood: about the period of puberty, the cerebellum acquires a very rapid development, being then nearly twice as large, in proportion to the other portions of the brain, as it was at birth. The remaining portions of the nervous system become perfected in organization, and all the organs of sense attain, during childhood, their complete development.

Towards the close of childhood, the organs of generation, in both sexes, are fully evolved, and become covered, externally, with hair. In the female, at this period, the mammæ begin to appear upon the

upper part of the chest.

All the parts of the body preserve, during the earlier stages of child-hood, much of the softness of infancy; the predominance of the white fluids, however, gradually diminishes; but the various tissues are still liberally supplied with arterial blood, and the capillary system is

still more extensively expanded than in after life.

The whole of the vital functions, proceed rapidly during childhood towards their complete development. Digestion is still extremely active,—almost every species of wholesome aliment is rapidly converted into chyme by the stomach; the appetite is acute, and a frequent and plentiful supply of food is demanded. The sense of hunger is more imperious, and less easily borne, at this age, than at any subsequent period of life. Thirst, or a desire for aqueous diluents, is more frequently experienced than during childhood, as well in consequence of the more solid and stimulating character of the food that is eaten, as from the greater waste of the watery portion of the blood, by the active muscular exercise to which the child is prompted by an instinctive impulse. Nutrition is equally active with digestion, assimilation still predominating over decomposition; and hence the body still continues to increase in size. The cessation of growth seldom takes place until the twentieth or twenty-first year; and Quetelet has found, from numerous comparative observations, that in the male, the height frequently increases after the above period, even as late as the twenty-fifth year; and we have reason to believe, that a regular physiological increase in other organs, especially in different portions of the brain, may occur even beyond this period.

Respiration, although not so frequent as in infancy, is fuller and deeper, in consequence of the greater expansion of the chest; and a larger

amount of oxygen is consumed in the process. The action of the heart, though still frequent, is less so than in infaney, and more energetie. The process of ealorification has an increased degree of activity, consequently the temperature of the body is higher, and more uniformly maintained, the influence of moderate degrees of cold being

borne with a greater degree of impunity.

The functions of all the external senses are peculiarly acute, and the intellectual and moral faculties augment daily in extent, as well as in activity. The powers of observing, comparing, judging-of reaonsing generally—though still imperfect, have acquired a much greater extent and accuracy. The memory is still quick and tenacious. Hence this period of life is, with great propriety, the one usually devoted to mental education.

Not only is the intellect in childhood more fully expanded, but the higher moral faculties have likewise come into action. The child is capable of distinguishing between right and wrong, virtue and vice, and of understanding, to a certain extent at least, his several duties, whether of a natural, civil, or religious character. He acts less from instinct and feeling, and more from deliberation and judgment, than the infant; nevertheless, he is still, in a great measure, the slave of impulse and of passion.

The expressions and gestures of childhood are strongly marked, and very mutable, betraying the great activity of the mind, and the varied sensations that are experienced, in rapid succession. This period of

life is noted for great inquisitiveness and extreme loquacity.

Towards the latter period of childhood, articulation has attained a considerable degree of perfection; the voice does not, however, attain its full depth and compass until subsequent to the period of puberty.

The same desire for constant bodily exertion exists, to a greater extent even than in infancy. Confinement of all kinds is endured with difficulty, and, if too long continued, is productive of serious injury to health. Sleep is still profound, and a much greater amount is demanded than in the subsequent periods of life.

As puberty approaches, the genital functions, and the desires conneeted with them, begin to be developed. The menstrual discharge in

females usually commences towards this period.

In the foregoing brief sketch, we have presented the condition of the organization, and of the functions of the human body, at the several stages of development, from infancy to puberty, as it occurs in the generality of eases. Exceptions, however, frequently occur, not only in regard to the period and order of succession in which the march of organization in individual organs takes place, and the activity of their respective functions is displayed, but in the period of growth, and full development of the entire organism.

The number of years that have elapsed since birth, does not afford a positive indication of the physiological condition of the human body, nor of any one of its organs. Climate, moral and physical education, diet, regimen, and various other circumstances, produce so powerful an influence either in retarding or accelerating the development of the whole, or certain parts of the organism, that the same physiological condition of individual organs, or of the entire system, will occur in one individual several weeks, months, or even years, sooner or later than in another. Thus the age of puberty, especially in females, is attained, in tropical climates, at an age at which, in colder regions, the individual is still scarcely emerged from infancy. In fact, all those circumstances which exert a stimulating influence upon the nervous system, or which tend to call early into exercise particular organs, are calculated to produce a rapid and premature development of function, and at the same time, by hurrying the organism through the various stages of organization, impair its energies, and abridge the period of its existence. While, on the other hand, every thing calculated to abstract the organs of the body from the full influence of their natural stimuli-to retard their exercise or impair their nutrition, will protract the period of their development, or even prevent their complete organization. Thus, in warm climates, the stage of infancy is extremely short, that of puberty is early attained,—the period of maturity arrives and passes with equal rapidity, and the decrepitude of old age is experienced, often, when, in colder climates, the body is still in the enjoyment of all its vigour. A soft and luxurious life, heating aliments and drinks, deprivation of muscular exercise, premature exercise of the intellectual organs, or early excitement of the passions, exert a somewhat similar influence. On the other hand, in cold climates, and by deficient or unnutritious food, the want of proper moral and intellectual culture, and other depressing causes, the development of the body is retarded, and its complete organization, with the full and vigorous exercise of its functions, if attained at all, is attained only by slow degrees, and at a late period.

From a variety of causes, to which the child is subjected from birth, or during the period of infancy or childhood, a single organ, or system of organs, acquires a degree of development, beyond that of the rest, and causes the functions performed by it to assume a very evident predominance. Thus, in some children, the head is large, and great activity and intelligence are early displayed; in such, the cerebro-spinal system has acquired a predominance of development and function, constituting the nervous temperament. In other children, great muscular power is early displayed; the chest is capacious; the various parts of the body well nourished, and the complexion florid; the circulatory system, and the organs engaged in hæmatosis and nutrition, predominate;—there is considerable strength and activity of body, with, in general, moderate intellectual activity or power.

This constitutes the sanguineous temperament.

A prominent abdomen, with a languid circulation, and paleness of the skin, a craving appetite, and but little activity of either mind or body, indicate the predominance of the abdominal organs and lymphatic system, and constitute the marks of the lymphatic temperament. "The expression of the countenance, or form of the features, is also some indication of the prevailing temperament. Thus the development of the forehead, indicates the proportion of the encephalon; the part between the forehead and mouth is, in general, in harmony with the development of the thorax; while the lower part of the face is in relation to the size of the abdomen; so that in each we have an index of the temperament, whether cranial, (nervous), thoracic, (san-

guineous), or abdominal, (lymphatic)." (Evanson.)

Other varieties of temperament occur, and, some individuals, present no strongly marked temperament—the development of the several organs being nearly equal; or, on the other hand, more than one of the above temperaments may occur in the same individual. In infancy and childhood, the lymphatic temperament has a tendency to prevail. The nervous becomes more particularly manifest at or after the age of seven, when, as we have seen, the brain attains a more full development, while the sanguineous belongs, more properly, to a later period, when the thoracic organs acquire their proper

organization and fullness of function.

The particular temperament of the individual, may be born with him, and, in many cases, is hereditary; or it may be developed during infancy and childhood, by the influence of the external agents to which the child is subjected, or by errors in his physical and moral treatment. The leading principle upon which the treatment of children should be invariably conducted, is to allow to every organ its equal and appropriate nutriment; and while no one is forced into activity prematurely, to give to each its equal and appropriate share of exercise.—Promoting the development, at the proper season, of those which are deficient in activity, and removing every unnecessary stimulant from such as exhibit a tendency to a disproportionate development and activity of function.

CHAPTER III.

PATHOLOGY OF INFANCY AND CHILDHOOD.

During infancy and childhood, there exists a very strong predisposition to disease. This predisposition is the greatest within the first year subsequent to birth, and it gradually decreases with the increase in the age of the child. During the few first weeks of existence, the imperfect organization of every part of the body, and the deficiency in vigour of most of its functions, render it peculiarly liable to the action of various agents, the impression of which, while it is sustained with comparative impunity at a later period, produces in the delicate

organs of the infant, the most serious disturbance, resulting, in the greater number of cases, in a rapid extinction of life. At birth, and for a short time subsequently, the vital powers are, in fact, so feeble, that they present but little resistence to the agents by which they are assailed, but sink rapidly under their influence.* Even when the infant has become endued with greater tenacity of life, the predominant activity of the ganglionic system, and of the nutritive function, and the extent of the capillaries, throughout every organ and tissue, give to each a degree of susceptibility, and a tendency to take on morbid action, far beyond what it possesses at any future period of life; and this tendency is still further increased as the more important organs become more or less rapidly developed, and assume, for a season, a predominance of action.

The large amount of arterial blood with which, during infancy, all parts of the organism are supplied for the purposes of nutrition, causes a state of hyperemia, in one or other of the tissues, to be readily produced, while the exalted activity of the capillary system during the progress of development, and especially in those organs, in which nutrition, for the time predominates, is quickly transformed, by any

accidental irritation, into inflammatory action.

The skin, and the mucous membrane of the digestive canal, and of the respiratory organs, are, in the infant, the principal surfaces upon which morbid impressions are received, and consequently they are those also in which disease usually commences. It seldom, however, remains for any length of time confined to these tissues, but, in the greater number of cases, from the extreme susceptibility of every portion of the system, it is sooner or later reflected upon other, and often distant organs; in this manner increasing the extent of morbid action—or ceasing at the part where it originally commenced, as it augments in intensity in the organ secondarily affected, changes thus its location. It is in this manner that affections of the skin, alimentary canal, and respiratory organs reciprocally produce each other, and that the brain becomes in early life, so generally involved in the course of nearly every disease that occurs, when it is of a severe or protracted character.

During infancy, morbid action always exhibits a greater tendency to spread over the tissues in which it occurs, than in the adult. This is especially the case in inflammations of the mucous membrane; these, unless quickly arrested by appropriate remedies, almost invariably extend themselves, to a greater or less extent, along the course

^{*} During the six years preceding 1840, 716 children under one year of age, died in Philadelphia from debility alone.

[†] During the six years preceding 1840, the entire number of deaths in Philadelphia, was 48,269; of which 24,738 were of children under 15 years of age; namely, Under 1 year of age, 11,888 or 24.6 per cent. of the entire no., and 43.2 of those under 15.

Between 1 and 2 y'rs 5,027 or 10 4 " " 20.3 " " 2 and 5 " 4,872 or 10. " " 19.8 " " 5 and 10 " 2,171 or 4.5 " " 8.7 " " 10 and 15 " 780 or 1.6 " " 3.1 "

of the membrane; increasing thus the extent of the disease, and at the same time diminishing the chances of its favourable termination. It is seldom that inflammations of the fauces and pharvnx in infants, are not found to extend to some distance, into the esophagus, or into the larynx. The diptheritic or pseudo-membranous angina of childhood, is confined, in but a very few cases, to the mouth and fauces, but extends into the nose, along the eustachian tubes into the ears, as well as into the larynx, and down the pharynx into the esophagus; producing, when it invades the larynx, all the symptoms of genuine croup. In croup, we have this tendency of inflammation to spread along the course of mucous surfaces, strikingly exemplified. Confined in the early stages of the disease to the larynx and upper portions of the trachea, the inflammation descends from thence, more or less rapidly, into the bronchii and air cells of the lungs. The same thing takes place in inflammations of the digestive canal; their tendency being to spread downwards along the course of the intestinal mucous membrane.

Effusion, whether of serum or of lymph, is peculiarly liable to occur, and often at a very early period, in the inflammations of the serous and mucous tissues, during infancy. A very slight irritation of the arachnoid membrane will early give rise to effusions of serum in the brain; while towards the commencement of dentiton, when the muciparous follicles of the intestines become developed, any accidental cause, exciting these to an increased activity of function, will produce the most profuse watery discharges from the bowels. Upon both the serous and mucous membranes, inflammation during infancy has a tendency to produce exudations of lymph:—the production of diptheritic exudations upon the mucus surfaces, would appear to be, in some measure, a result of inflammatory action, peculiar to infancy. Not only do they occur upon the throat and respiratory tubes, but upon the apertures of the genito-urinary organs; the contour of the anus; the external meatus of the ears; the folds of the groin, and other similar parts, when these are in a state of excoriation or ulceration.—(Trousseau.)

The delicacy of the skin during the earlier stages of infancy, its extreme irritability, and very great vascularity, render its several tissues peculiarly liable to disease of various grades, from the simplest rash, to the most violent inflammation, terminating rapidly in extensive disorganization; and from the action of causes, which, in the adult, would scarcely produce any morbid effect. Infancy is, in fact, the age when eruptive complaints most commonly prevail, especially those of an acute character. A large number of the cutaneous diseases occurring at this period, are evidently dependent upon a morbid condition of the digestive organs; others are produced by a neglect of cleanliness, and a few, without including the febrile exanthemata, are the result of irritations directly applied to the surface.

Many of the febrile exanthemata are almost exclusively confined

to the period of infancy; this is particularly true of measles and scarlet fever—diseases that are but seldom met with in the adult.*

The respiratory mucous membrane, is liable, in the infant, to various grades of inflammation; in general, however, of a very acute character. Bronchitis and croup, being among the most common, and fatal, diseases of infancy. Laryngitis, is also of frequent occurrence. The same is true of pneumonic inflammation and pleuritis. affections of the respiratory organs, are, in general, produced by the influence of cold, and often from the improper exposure of the upper portion of the chest, in consequence of the dictates of fashion, rather than those of prudence, being consulted in relation to the dress of infants. Among the German population in the interior of Pennsylvania, who are in the habit of clothing their children in such a manner as to leave no part of the breast and lower portion of the neck exposed, Dr. Eberle met with but one case of croup, during a practice of six years, and this case occurred in a family, who had adopted the fashionable mode of dress, in which the neck and upper portion of the chest is left uncovered.

According to Billard, the pneumonia of very young infants is not an idiopathic affection, resulting from an irritation developed in the pulmonary tissue under the influence of atmospherical causes, but is evidently the result of a stagnation of blood in their lungs. The blood, under these circumstances, acting in some measure as a foreign body, and concurring in the production of a change in the pulmonary tissue, with which it combines and is identified—producing thus a true hepatization of the lung.

Among the affections of the respiratory organs peculiar to the period of infancy and childhood, are to be ranked hooping-cough and laryngismus stridulous; the first rarely occurring after puberty, and the last being confined almost exclusively to the period which intervenes between birth and the termination of the first dentition. Both these affections are of a spasmodic character; for although in hooping-cough, especially in its earlier stages, there always exists bronchial inflammation, to a greater or less extent, yet the peculiar

^{*}In Philadelphia, during the six years preceding 1840, 1132 deaths occurred from Scarlitina, in individuals under 15 years of age, viz.: 108, in infants under one year; 200 in those between one and two years; 536, in those between 2 and 5; 252, in children between 5 and 10; and 36, in those between 10 and 15; and but 38 in individuals beyond this age.

During the same period, 427 deaths occurred from measles, in individuals under 15 years of age, viz.: 63, in those under 1 year; 118, in those between 1 and 2; 199, in those between 2 and 5; 46, in those between 5 and 10; and 1 in those between 10 and 15; and but 4 in individuals beyond this age. The deaths from these two diseases, comprised nearly a sixteenth of the whole number of deaths, within the same period, in individuals under 15 years of age.

So far as we can judge from the number of deaths that occur, small pox is less exclusively a disease of early life; for within the above period, 469 deaths took place from this disease, of which 163 were in individuals over 15 years of age.

characteristics of the disease, depend evidently upon a disordered action of the respiratory muscles, resulting from nervous irritation.

Laryngismus stridulous, would appear to be altogether dependent upon an irritation of the laryngeal nerves, produced by disease of the brain, by a cold, confined, and impure atmosphere, or by the reflex action of irritations scated in the digestive organs. The enlarged state of the thymus gland, or of the lymphatic glands of the neck, so often met with in infants affected with this disease, and by which many pathologists suppose it to be produced, is to be viewed, we suspect, in nearly every instance, as an accidental occurrence.*

It is the gastro-intestinal mucous membrane, that is the chief seat of disease in infancy. A slight excess of food or that which is too stimulating, or food unadapted to the condition of the digestive organs at this period of life; a trifling reduction of the temperature of the skin, personal impurities, or any degree of impurity in the atmosphere, will, in general, give rise to colic, vomiting and purging, apthæ, tympanitic distentions of the abdomen, and the other phenomina of irritation and of acute or chronic inflammation of the stomach and bowels. Softening and perforation of the stomach, constituting the disease to which the denomination *Gastro-malacia* has been applied by the German writers, most frequently occurs during infancy.

The inflammation, in many instances, extends from the alimentary canal to the mesenteric glands, producing their enlargement and disorganization, attended often with enormous distension of the abdomen, and extreme emaciation of the body, either in consequence of the defective digestion of the food, or the impediment to the free passage

of the chyle through the diseased glands.

Inflammation frequently extends, also, from the digestive mucous membrane to the peritoneum. It here often assumes a very chronic form, and, sooner or later, causes an effusion of serum into the cavity of the abdomen.

Intestinal invagination, is of very frequent occurrence, during the earlier stages of infancy. In many cases, its existence is not indicated by any other symptom than habitual costiveness. It often, however, gives rise to acute pain, considerable distension of the

* In Philadelphia, during the period referred to in the preceding note, of the 24,738 deaths among children under 15 years of age—

	Were from	Under one year.	Between 1 and 2 years,	2 and 5 years.	5 and 10 years.	10 and 15 years.
606	Bronchitis,	347	128	102	24	5
617	Croup	217	130	217	51	2
800	Pucuinonia,	347	197	190	57	9
511	Hooping Cough,	242	135	112	21	1
2534		1153	590	621	153	17

Reing rather more than one ninth of all the deaths in individuals under 15 years. It is probable that under the head of pneumonia, are included many cases of bronchitis. Of deaths from laryngismus stridulous, no mention is made in the bills of mortality; these are probably included under the head of croup.

abdomen, excessive vomiting, and death; and is always to be ranked among the most dangerous affections to which the infant is liable.*

During infancy the large size of the brain, the delicacy of its structure, its extreme vascularity, and the activity with which the nutritive process is there carried on during the period of its rapid development, render it extremely liable to disease, from morbid impressions made directly upon it, or by irritations transmitted to it from other parts. Hence, spasms, convulsions, deep comatose sleep from congestion of its blood-vessels, and inflammation of the brain or of its membranes, terminating in serous effusion within its ventricles, or a softening, more or less extensive, of its substance, are among the most frequent diseases of infancy. Few cases of extensive, intense, or long-continued irritation of the alimentary canal, occur at this period of life, without producing more or less disease of the brain. Nothing, in fact, is more common, than for symptoms, indicative of more or less cerebral disease, to occcur, in the course or towards the termination of nearly all the affections of infancy.

Few of the nervous affections, properly so called, occur during infancy, notwithstanding the extreme susceptibility of their nervous system, and its liability to disturbance from direct as well as remote irritations. This disturbance, in the infant, most commonly exhibits itself in the production of spasms or convulsions. Convulsions, and convulsive diseases, are indeed, of more frequent occurrence during infancy, than at any subsequent period of life. Arising, not unfrequently, from diseases of the brain or spinal marrow, they are, nevertheless, produced, in perhaps the majority of instances, from irritations transmitted to these parts from the digestive organs; and it is often surprising, from how slight a cause they will result, and

^{*}In Philadelphia, within the period already mentioned, there occurred deaths from various diseases of the digestive organs, as follows :-

From Diarrhæa and Dysentery,-in those under one year, 401; between 1 and 2 years, 205; between 2 and 5, 129; between 5 and 10, 67; between 10 and 15, 23. -Total, 825.

Infantile Cholera,—in those under one year, 1021; between 1 and 2 years, 472; 2 and 5 years, 79; between 5 and 10 years, 7.—Total, 1579.

Inflammation of the Stomach and Intestines,—under 1 year, 214; between 1 and 2 years, 100; between 2 and 5, 82; between 5 and 10, 43; between 10 and 15 12.-Total, 451.

⁶⁶ Invagination of the Intestines,—under 1 year, 9; between 2 and 5 years, 1; between 5 and 10, 1.—Total, 11.

Marasmus,—under 1 year, 198; between 1 and 2, 82; between 2 and 5, 35; between 5 and 10, 7.—Total, 322. 66

⁶⁶ Worms,—under 1 year, 4; between 1 and 2, 11; between 2 and 5, 18; between

⁵ and 10, 6; between 10 and 15, 3.—Total, 42.
To these may be added, the deaths from teething; the majority of which, are from disease of the alimentary canal.—Under one year, 34; between 1 and 2, 29; between 2 and 5, 7.—Total, 70.
Total of deaths from these diseases, 3,300, namely:—

Under one year, 1881; 1 to 2 years, 899; 2 to 5 years, 351; 5 to 10 years, 131; 10 to 15 years, 38.

Being rather more than one-seventh of all the deaths in individuals under 15 years.

how promptly they cease upon its removal. Epilepsy and chorea, generally occur during the latter period of infancy, and the early

stages of childhood.*

The extreme development and activity of the whole lymphatic system during infancy, causes it to become, readily, the centre of irritation, giving rise to enlargement, inflammation, and suppuration of the lymphatic glands, to a tuberculous condition of the lungs, brain, and other organs, to serous infiltration of the cellular tissue, and to

various other symptoms of scrophulous disease.

Tumefaction, inflammation, and suppuration of the lymphatic glands, particularly of the neck, axilla, groin, &c., frequently occur during infancy and childhood, independently of any scrophulous affection. Engorgement, often running into inflammation, of the parotid gland, would appear to be, in some respects, peculiar to the period of infancy. It often prevails as an epidemic, and is attended with several peculiarities, which give it somewhat of a specific character—it seldom occurs more than once in the same individual; and has always a strong tendency to produce, by a species of metastasis, inflammation of the testicle in the male, and of the mammæ in the female, of the same side as that on which the disease in the neck is seated.

Edematous swellings of various parts of the body, are very common during infancy, either in the course of protracted irritations of the alimentary canal, or towards the close of certain febrile affections; even general dropsy of the cellular membrane, is of very frequent occurrence after scarlitina. A very peculiar condition of the cellular tissue, occasionally occurs in young infants, from an extensive effusion of serum, giving to the parts affected a feeling of hardness, as if an induration of the subcutanous tissue had really taken place. The actual cause by which this effusion is produced, it is somewhat difficult to determine. According to Billard, who appears to have examined the subject with a good deal of care, the predisposing causes are, the natural feebleness of the infant; a state of general plethora; a superabundance of venous blood in the tissues; and a dry state of the skin, previous to the exfoliation of the epidermus; while the immediate causes are, an obstruction of the circula-

* From Diseases of the Brain, the number of deaths during the six years referred to, were-

were—	Under one	Between 1 and 2 years.	Between 2 and 5 years.	Between 5 and 10 years.	Between 10	
From Convulsions,	1117	250	198	56	9	1630
" Dropsy,	444	345	238	94	12	1133
" Inflammation,	153	93	94	63	20	422
" Congestion,	35	22	22	14	3	96
" Diseases to whi						
signation is gi	ven, 34	35	29	8	3	109
					-	
D '	1783	744	581	235	47	3390

Being rather more than one-seventh of all the deaths in individuals under 15 years of age.

tion of the blood, from over distension of the vessels; its engorgment in the cellular tissue; and, lastly, the action of external agents on the skin, by which the cutaneous transpiration is suspended, and, consequently, the accumulation of serosity in the cellular tissue is promoted.

In the infant, there exists a very strong predisposition to the formation of tubercles, in almost every part of the body; even at birth, their existence, in various stages of advancement, to complete sof-

tening, has been detected.

During the latter part of infancy, tubercles occur very frequently in the lungs; consumption being, at this period, a common and destructive disease.* The mesenteric and bronchial glands most commonly participate with the pulmonary affection, and, at a later period, the extremities of the long bones; but nearly every tissue and organ may become the seat of tuberculous formations. According to Dr. Carswell, it is upon the mucous membranes they are chiefly developed; they are, however, frequently met with in the serous tissue, and in the substance of the liver, brain, spleen, lymphatic glands, pancreas, and other organs.

To their existence in the brain, and the connection between tubereulous depositions in that organ, and hydrocephalus, attention has, but recently, been directed. According to Dr. Carswell, tubercle of the brain is more frequent in young infants, than at a later age; while Dr. Hennis Green found, that the age at which it most gener-

ally occurs, is from three to seven years, inclusively.

In numerous instances, tubercles of the brain give rise to no particular symptom, by which their existence can be detected; in other cases, the phenomina produced by them, are, in their chronic stage, severe pain of the head, partial or general convulsions, paralysis, weakness or contraction of certain muscles, change of temper, amaurosis or strabismus, and coma; in their acute stage, the symptoms produced, are those of acute hydrocephalus, or softening of the

brain. (Green.)

Many infants present at birth, a particular organization, indicated either by a fair, transparent complexion, with light eyes, and hair; or, a dark, muddy complexion, with hazel eyes, and black hair. In the progress of infancy, the forehead, in general, becomes projecting, the upper lip tumid, the thorax remains narrow, or flattened, the abdomen protuberant, and the lymphatic glands of the exterior unusually large and prominent; children thus constituted, grow rapidly, and often present great quickness, and precocity of intellect. The impression of any of the usual morbific agents, is liable to pro-

Being 2.26 per cent. of the whole number of deaths that occurred under 15 years of

age.

^{*} During the period already referred to, the deaths from consumption, in individuals, under 15 years of age, were as follows: under 1 year, 148; between 1 and 2, 110; 2 and 5, 164; 5 and 10, 79; 10 and 15, 60.—Total 561.

duce, in them, a diseased condition of the glands of the neck, or of the mesentery; and the slightest irritation, affecting either the lungs or bowels, very generally gives rise to the formation of tubercles,

particularly in the pulmonary tissue.

The peculiar condition of the organism above described, is often produced, after birth, from a variety of morbific causes, by which, the healthy condition of the blood, and the regular and perfect nutrition of the several organs, are impaired; but especially, from deficient or improper food, exposure to an atmosphere, rendered unwholesome, whether from want of ventilation, humidity or impurities; longcontinued exposure to a degree of cold, insufficient to produce inflammation; neglect of personal cleanliness, and, deficient exercise. such cases, the limbs remain small, the muscles soft, flaccid, and deficient in energy; the skin assumes a pale, or a dirty yellow complexion; the articulations become enlarged, and the bones soft, so as to be readily bent and distorted, by the action of the muscles, or by the weight of the body. The lymphatic glands are liable to chronic enlargement, or to inflammation and suppuration, giving place to a thin, serous discharge, containing flakes—often large masses, of a curdy appearance. The ulcers which result, are long in healing, and, very generally, leave large, permanent cicatrices, of a very peculiar, and unseemly appearance. Most of the inflammatory affections occurring in such children, are subacute, and of long duration; and are, frequently, the cause of the development of tubercular disease of the lungs and other organs. Diseases of the skin, of a very obstinate and intractable character, are also of common occurrence. The same is true of inflammation of the edges of the eyelids, with more or less injection of the conjunctiva; and of inflammation of the external meatus or deep seated portions of the ear, giving rise to long continued, and highly offensive discharges, from that organ, and a complete destruction of its internal structure.

Diseases of the urinary organs are not very frequent, nor of a very serious character, during infancy. Dysuria is, however, common, either from irritation, scated at the neck of the bladder, or reflected upon it from disease of the digestive organs. It is also common during dentition, and occurs, occasionally, in the course of certain febrile affections. An increased flow of urine, is very common, in infancy, during dentition, and in certain disordered conditions of the digestive functions. Genuine diabetes is said to occur in infants, accompanied with a copious diarrhæa, intense thirst, and rapid emaciation. Cases are mentioned by Isenflamm,* Morton,† McGregor,‡ Willis,§ Venables,§ Mott,¶ and others; we have never met with them. Dur-

^{*} Ueber die Eingeweide, 1784.-Phthisiologiæ, Lib. I. cap. viii. 1697.

[†] Lond. Med. Gaz. vol. xx. † On Urinary Diseases.

[§] On Diabetis, 1825.

Amer. Med. and Philos. Register, v. i. p. 387.

ing the 15 years, preceding 1840, but one death is reported to have occurred, in Philadelphia, from diabetes, in an infant under five

years, and one in a child between ten and fifteen years.

The urine, particularly in irritations of the digestive organs, is often of a whitish appearance, or lets fall a whitish deposit, as it cools or is evaporated. Very deep coloured urine, is often passed in the febrile affections of children.

Gravel often forms, in children, from derangement of the digestive function, either from improper food, confinement in a close and impure atmosphere, or, from exposure to cold and dampness. It may occur in the form of a red deposit, consisting of uncrystalized lithic acid, when its passage is attended with little, or no irritation of the urinary organs; or, it may consist of the acid, in a crystaline form, causing, in its passage, more or less irritation. Urinary calculi are, occasionally, met with in children; they ordinarily consist of the lithate of ammonia, and are small in size, and of a elay colour.

Incontinency, or an involuntary flow of urine, is of frequent occurrence, during infancy and childhood. We have, already, noticed, in what manner the anatomical condition of the bladder, renders it difficult for the urine to be retained, after it has accumulated, to a certain extent. Incontinence of urine is often, in children, the result of habit, or it occurs during deep sleep, at a particular hour, and may often be remedied, by accustoming the child to regular periods of urination, or by awaking him from sleep, for the purpose of evacuating the bladder, previous to the hour when the involuntary discharge usually takes place; in a short time, the bladder becomes accustomed to endure the presence of its contents, until they are evacuated by a voluntary effort. Incontinency of urine, in children, is attributed, by Willis, to a derangement of the secretory function of the kidneys, by which a copious separation of watery fluid from the blood takes place, in which there is a deficiency of the characteristic ingredients of the urine. This is certainly not true in all cases; we have seen it result, as it appeared to us, from the irritation of the rectum, by oxyures. It would often seem to arise, also, from a want of proper control over the spincters of the bladder; or, to so great an irritability of the bladder itself, as to cause it to expel the urine, almost as soon as it reaches its cavity. We have seen many instances, in which incontinence of urine was a congenital affection -the urine dropping constantly from the urethra; in a majority of these cases, the patient died early, from disease of the brain.

Most of the acute diseases of infancy and childhood, are attended with more or less febrile reaction, which usually assumes the remittent type, with exacerbations towards evening, or during the night. Gastro-intestinal irritation or inflammation, which, being one of the most common of the affections of early life, is that which most usually gives rise to the remittent fever, described by writers as a disease peculiar to children; and attributed, by many of them, to the presence of worms. To nearly all the fevers, infants and children are

liable; but, not to the same extent as adults—if we except the exanthematous, many of which are of rare occurrence, after the age of puberty. In those districts, in which intermittent fever is endemic, children, even at the breast, will become affected with it. The same is true of the bilious and yellow fevers. The various forms of continued fever, seldom occur in early infancy; and young children are less predisposed to them, than those who are older. In severe epidemies of typhus and typhoid fever, however, large numbers of infants have been known to be attacked, and fall victims to the disease.

The general observations, made in reference to the diseases incident to infancy, will equally apply to those of the earlier period of childhood. Though cutaneous affections are still frequent, yet the skin is less liable to disease, than during the preceding stage of existence. Furunculi, or circumscribed phlegmonous inflammations of the skin, are common at this age. The respiratory mucous membrane, as well as that of the alimentary canal, become readily irritated, and inflamed. The brain, also, from the great activity of its functions, is now peculiarly exposed to disease; hence, violent pains of the head, and cerebral inflammation, are of frequent occurrence; convulsions are less frequent, than during the period of infancy. From the great development of the capillary system, which continues during youth, and the tendency to hyperemia, and to irritation of the respiratory mucous membrane, hæmorrhages from the lungs are very liable to occur towards the close of childhood; about this period, also, profuse epistaxis is not unfrequent. Tubercular disease of the pulmonary organs, is often developed, during childhood; and scrophulous swellings and ulcerations of the superficial lymphatic glands, are of common occurrence. From the amount of exercise, to which the body is subjected during youth, inflammations of the joints, are liable to be produced; rheumatism is, also, more frequent, at this age, than previously. The heart readily sympathizes with the various irritations that occur, in the other organs; hence, most of the diseases which then take place, are accompanied with febrile symptoms, of a more intense character than in infancy.

The causes of disease, are nearly the same during infancy and child-hood, as in the subsequent periods of life—from but few are they entirely exempt—while nearly all the ordinary morbific agents act upon the infant, with much greater severity than in after life. Many of the affections, that occur in early life, may exist at birth:—thus children are occasionally born affected with syphilis, small pox, a tuberculous condition of various organs, softening of portions of the stomach and bowels, inflammation of the different organs; hydrocephalus, and various malformations: or, there may exist from birth, a peculiar condition of the organism, predisposing it, subsequently, from the action of slight causes, to a particular form, or class, of diseases. This condition of organism, may exist in all the children of certain

families, and would appear, in many cases, to be hereditary—the same

diseases prevailing, for many generations, in the same family.

Mental impressions-deep anxiety-and the various intense affections of the mind, whether of a depressing or exciting character, which constitute so fruitful a source of disease in the adult, are scarcely operative in the infant; and are seldom the cause of serious disturbance in the child. Violent excitement of the nervous system, from loud and unexpected sounds; arousing the infant suddenly from its sleep; or exciting in it intense alarm or fright; have been known, in many instances, to produce, even at an early period of infancy, the most serious effects, resulting in a fatal attack of convulsions, or, at a later period, in confirmed idiocy:-violent paroxisms of anger, by whatever cause excited, are equally injurious, during infancy and childhood. Notwithstanding the lively and cheerful disposition, so common in childhood, its quick forgetfulness of past suffering, its little anxiety for the future, and its perfect contentment with the enjoyment of the present moment, yet, by improper treatment, or a neglect of moral education, the passions, even at this early period, may be made the source of much disease and suffering. By parental unkindness—a mistaken, and over-rigid discipline—confinement from childish amusements and exercises—indiscreet ridicule of faults or imperfections, and the withholding every species of encouragement; the spirits, even of the child, may be depressed, and discontent, hatred. jealousy, may be engendered, and become the remote or exciting causes of serious disease, either mental or bodily.

Too much, or deficient, and improper food, are among the most common of the causes of disease, from birth until puberty. By the disorder of the digestive function induced by errors in diet, the blood becomes vitiated, or imperfectly elaborated, and the nutrition of every part of the body, deranged, or defective; while, at the same time, irritation of the alimentary canal is produced, running on to inflammation and rapid disorganization, or becomes, sooner or later, transmitted to the brain, or reflected upon other organs, disturbing their functions, or producing serious disease of their substance.

Another fruitful source of disease, in infancy and childhood, is impure, or confined air. This acts upon the blood, through the medium of the lungs, and, probably, of the cutaneous surface, also. Independently of preventing, in this manner, the due oxygenation of the blood, impurity and want of ventilation in the atmosphere would appear to produce a deleterious effect upon the infant organism, by acting immediately upon the nervous system. The convulsions which occur within the first two or three months:—the trismus nascentium, the spasm of the glottis, in young infants, and other spasmodic diseases, seem, evidently, to result from the action of impure air upon the nerves.

In children exposed, for any length of time, to the influence of a corrupted or confined atmosphere, the powers of life become depressed; digestion and sanguification are imperfectly performed;

and nutrition is impeded, or disturbed. The skin assumes a pale and sickly aspect; the muscles a soft and flabby feel; and disease of the alimentary canal, lungs, brain, or lymphatic glands, sooner or later ensucs. Children, who are confined to badly ventilated and lighted apartments, even where no cause exists capable of imparting foreign impurities to the air respired, present, invariably, a pale and unliealthy appearance, and are prone to disease. It is, probably, in consequence alone of the greater purity and freshness of the air in elevated country situations, and the greater amount of exposure to its influence, as well as to that of the light, that the deeper colour of the skin, and the greater amount of health and robustness, possessed by children who inhabit the latter situation, when compared with those, who are brought up entirely within the confines of a large and crowded city, are to be attributed. Alison, and Baudelocque, ascribe more influence in the production of scrophulous affections, to impure and confined air, than to an impoverished diet, or improper food.

Cold, either alone or combined with dampness, so fruitful a source of disease during every stage of existence, is peculiarly so in infancy and early childhood—in consequence of the defective power which then exists, of generating heat, and, consequently, of resisting the influence of even a slight impression of cold. Exposure to too low a degree of atmospheric temperature; to drafts of cool air, when the body is in a state of perspiration; too slight clothing, or that which protects only partially, the surface; occupying damp rooms or beds, and allowing portions of the dress that have become wet from any cause, to remain unchanged; or exposure to rapid and sudden alternations of temperature, are the usual means by which, in children, the heat of of the surface is reduced, and the organism subjected to the deleterious influence of cold, by which inflammations of the stomach and

respiratory organs, are induced.

The morbid effects of cold are invariably increased, by its being combined with dampness; hence, children are often seriously affected by a degree of what is termed, rawness of the air, not amounting to positive cold. Cold, combined with dampness, is the fruitful source of bronchitis, croup, and of certain forms of diarrhæa, and dysentery in children. It is this which renders low, damp situations, and deep, secluded valleys, so especially prejudicial to health, in the early stages of life. During sleep, children are even more subject to the morbid influence of sudden alternations of temperature, than during their waking moments; an attack of bronchitis, croup, or abdominal inflammation, is frequently caused by their being put to sleep at night, in a colder apartment than that they occupied during the day; by their throwing off the clothes, during sleep, when heated or in a state of perspiration, or by the cradle or bed, in which they repose, being placed in a draft or current of air.

The injurious effects of cold and dampness are not always exhibited in the immediate production of acute disease. Continued exposure to a cold and damp atmosphere, in early life, by depressing the vital

powers of the organism, may gradually undermine the health of the system, or give rise to chronic affections, the existence of which are first rendered apparent towards the period of dentition or of puberty, or upon the occurrence of some acute affection, resulting from the action of any of the causes of disease to which children are liable, and which it invariably renders more unmanageable.

Intense heat, which is always more or less injurious to infants, becomes, under certain circumstances, a fruitful source of disease in early life. Thus, when succeeded by a sudden reduction of temperature, or when the body is accidentally exposed to any cause by which its temperature is suddenly diminished, serious disease is very generally produced. But it is principally in the narrow lanes, courts, and alleys of the larger cities of the middle and southern states, that, during the summer months, excessive heat, in conjunction with a confined and impure air, displays its baneful influence upon the infant—subjecting them, upon the occurrence of the slightest irritation of the alimentary canal, to an attack of infantile cholera, which can seldom be arrested, excepting by a prompt removal from the heated and infected air by which it was generated.

From what has been said, it must be evident that the seasons of the year exert a considerable influence upon the health of infants, and to a certain extent, also, upon the form and character of their diseases; thus bronchitis, croup, and pulmonary inflammation prevail to the greatest extent, among children, during the more changeable and colder months; while bowel complaints, and especially cholera, prevail during the season of greatest heat, and dysentery and certain forms of diarrhæa during the autumnal months. The spring or autumn is the season during which epidemics of scarlatina, measles, and hooping cough, usually prevail; while small-pox is more

common during the winter.

In the city of Philadelphia, the mortality among children varies greatly with the season. Thus, under five years, the largest number of deaths, for the years 1837 to 39 inclusive, occurred in the months of June, July, and August, namely, 3074—this being the season of greatest heat, the mean range of the thermometer averaging from 70° to 79°. The next highest amount of mortality, occurred during the months of December, January, and February, namely, 1714—this being the season of greatest cold, the mean range of the thermometer averaging from 32° to 35°. In September, October and November, the mortality in children under five years was 1664; the mean of the thermometer ranging from 45° to 65°. The smallest amount of mortality occurred in the months of March, April, and May; the mean of the thermometer ranging from 40° to 60°. The relative mortality of children, under five years, compared with the whole number of deaths, varies some what from the foregoing statement; the highest proportion, namely, 60.9 per centum, occurring during the months of June, July, and August, and the smallest proportion, namely, 37 per cent. during the months of March, April, and May; but during the months of September, October, and November, the proportionate mortality is 48.5, and that during December, February, and March, only 47.2.

The following table exhibits the entire mortality during the years referred to, and the mortality of the several periods of infancy; the months being arranged, according to their greater or less mortality at each of the periods respectively:

Mean children under fit		Total deaths in children under fif- teen years.	In children under 1 year.	Between 1 and 2.	Between 2 and 5.	Between 5 and 10.	Between 10 and 15.
October, 53 May, 60	1861 1436 19 1261 19 1230 19 1232 20 1205 19 1190 176 1773 1020	July, 1299 Aug. 1202 June, 837 Mar. 798 Feb. 784 Sep. 762 Jan. 722 April, 713 May, 576 Oct. 556 Nov. 532 Dec. 516	July, 793 Aug. 638 June, 503 Mar. 430 April, 379 Jan'y 376 Sep. 375 Feb. 368 Nov. 289 Oct. 283 May, 281 Dec. 271	Aug. 324 July, 283 Sep. 184 June, 128 Jan. 126 Mch. 126 April, 118 Feb. 116 Oct. 104 May, 94 Nov. 85 Dec. 80	Mch. 165 April, 141 June, 139 Jan. 136 Aug. 136 Feb. 133 May, 131 July, 130 Sep. 128 Oct. 108 Nov. 108 Dec. 108	Aug. 88 April, 64 March, 63 Jan. 62 July, 62 Sept. 55 June, 53 Feb. 48 May, 48 Oct. 45 Dec. 44 Nov. 34	Jan'y, 22 May, 22 July, 21 Sep. 20 Feb'y 19 Aug. 16 Oct. 16 Nov. 16 March, 14 June, 14 June, 13 April, 11

Annexed, we present the proportionate ratio, in the first column, of the mortality in children, under fifteen years of age, compared with the entire mortality; in the second column, the ratio of the mortality in infants, under one year, to the whole mortality; and in the third column the ratio of mortality in infants, under two years, to the entire mortality:—the months being ranged, as above, according to their respective mortality:

Ratio of children to whole mortality.	Ratio in infants under one year.	Ratio in infants under two years.		
June, 70.3 per cent.	June, 45.6 per cent.	July, 57. per cent.		
July, 69.7 ,, ,,	July, 42.6 ,, ,,	June, 53. " "		
Feb. 65. "	Mar. 34.71 ,, ,,	Aug. 48. ", "		
Mar. 64.4 ,, ,,	Aug. 32. " "	Sep. 45.3 " "		
Sep. 61.85 ,, ,,	Feb. 30.5 ,, ,,	Mar. 44.8 " "		
Aug. 60.28 " "	Sep. 30.3 ,, ,,	Feb. 40. " "		
Apr. 56. "	Apr. 30. "	Apr. 39. ,, ,,		
Nov. 52. ,, ,,	Nov. 28.3 ,, ,,	Nov. 36.66 ,, ,,		
Dec. 52. " "	Dec. 27.5 ,, ,,	Dec. 35.5 ,, ,,		
Jan. 50.27 " "	Jan. 26. ", "	Jan. 35. " "		
May, 49. ,, ,,	May, 24. ", "	Oct. 35. " "		
Oct. 47. " "	Oet. 24. " "	May, 32. " "		

Worms in the bowels are generally ranked among the most usual causes of the complaints of infancy. That their presence may give rise to a morbid degree of irritation in the gastro-enteric mucous membrane, and secondarily, in the mesenteric glands, the brain or the lungs, there can be little doubt; nevertheless, they are less often a cause of disease, than they are popularly supposed to be, or even than they were formerly esteemed to be by physicians. The symptoms that are commonly

ascribed to the presence of worms, are produced, in the majority of cases, by a diseased condition of the alimentary canal, entirely independent of the presence of these animals, and may continue, notwith-

standing the destruction or removal of the latter.

The first dentition is frequently accused of being the immediate cause of the diseases which occur during the second period of infancy. Dentition, however, cannot, of itself, be considered a disease, during the period either of infancy or childhood; but when a predisposition to morbid action exists, the process of dentition may, then, become the exciting cause of the most alarming symptoms. The irritation produced in the gums, during the progress of the teeth to the surface, almost invariably gives rise to increased heat and redness of these parts, and sometimes to positive inflammation; and as the irritation of the gums extends to the gastro-intestinal mucous membrane, which, at this period, from the development and activity of its muciparous follicles, is readily excited to an increased secretion of mucus, some degree of diarrhea very commonly attends the process of teething. If, from any cause, the stomach or bowels have been brought previously into a state of morbid irritability, excessive vomiting and purging, fever, and other symptoms of more severe disease, may be induced.

In other cases, when the process of dentition is accomplished with great difficulty, violent inflammation or even sloughing of the gums may occur; and in children, in whom the powers of life have been reduced, and the nutrition of their bodies impaired, by constant exposure to a cold, damp, and confined atmosphere, or by deficient or improper food, the irritation, developed during the process of teething, may induce the peculiar gangrene of the mouth of children, to which the terms cancrum oris, water kanker, &c., have been applied. In Philadelphia, and other large and crowded cities, the irritation of teething is a very common exciting cause, during the summer months, of the cholera infantum.

In many instances, not only does the process of dentition excite irritation of the stomach and bowels, but in consequence of the increased amount of blood which it attracts to the vessels of the head and face, the tendency to disease, in these parts, is increased; hence, convulsions, opthalmia, inflammation of the glands of the neck, ulcerations behind the ears, eruptions of the face and scalp, arachnoiditis, and hydrocephalus, very frequently occur at this period of in-

fancy.

Deformity and disease are often occasioned, during infancy, by falls, by improper postures of the body long continued, by improper forms of clothing calculated to impede the motion of the limbs, or to prevent the development of certain parts of the body, and by too early attempts to induce the child to assume the erect posture, or to walk.

Some discrepancy of opinion exists, among pathological writers, as to the susceptibility of infants to contagion, some ascribing to

them an entire immunity from its influence, while nearly all consider them to be less subject to it than adults. In very young infants, it is true, we seldom meet with any of the febrile affections, the propogation of which is generally ascribed to contagion; but after two years of age, contagious diseases, if we include under this term small-pox, varieella, scarlatina, measles, and hooping cough, are of far more frequent occurrence, than after the period of puberty. To the morbid influence of the eauses of fevers generally, infants are peculiarly subject, and still we meet with but few cases of what have been termed idiopathic fevers, with the exception of the exanthematous, in the carlier stages of life; the reason of this is to be found in the different manner, in which those causes operate upon the organism of the infant, and that of the adult; or rather to the different phenomena, the same mobific causes produce, at these two periods of life; diarrhæa or convulsions, resulting, in the one, from the same morbid impressions which, in the other, give rise to some form of continued fever. simple continued, typhus, and typhoid fevers of systematic writers do, nevertheless, oceur occasionally during infancy; the fact of their rare oecurrence, previously to the tenth year, is, however, borne out by copious statistics.

CHAPTER IV.

SEMEIOLOGY OF THE DISEASES OF INFANCY AND CHILD-HOOD.

The detection and diagnosis of disease in the infant, is based, the same as in the adult, upon a careful examination and analysis of its various phenomena; but in the infant, the occurrence and extent of these phenomena must be derived, altogether, from the attentive observation of the physician, compared with those of the parents or nurse. From the little patient he can derive no other information than such as is expressed by the countenance, the positions of the body, the motions of the head, trunk, and limbs, the nature of the eries emitted, and the condition of the respective organs, as indicated by the regularity of their functions, or the extent and manner in which these are disturbed.

In the infant, the condition of the skin, the state of the various secretions and excretions, the appearance of the eye, the manner in which respiration is performed, have the same amount of value, as indications of the seat, nature, and extent of morbid action, and are as readily detected as in the adult; but, in the infant, the physician

can derive no assistance in forming his diagnosis, from the character and location of any pain, or other uneasy sensation the patient may experience—constituting, in many cases of disease, an important pathological feature—excepting from the external physiognomy peculiar to the various grades of suffering that occur in the different organs.

It is this physiognomy of suffering, as derived from the expression of the face, the cries, and the movements, which constitutes, in a great measure, the special semeiology of infantile diseases. M. Jadelot has attempted to present a correct exposition of the indications of disease, as derived from the expressions of the countenance, from the period of the first dentition until puberty:—his remarks, as furnished us by M. De Salle, in his edition of Underwood, are certainly interesting, but, in many respects, they are purely hypothetical.

The general phenomena of disease in infancy, notwithstanding they experience certain modifications, dependent upon the peculiar state of the organization, differ, nevertheless, but little from those observed in the adult. There are, however, a few morbid phenomena, peculiar to the infant; and others, which in the correct diagnosis of disease, have an importance far beyond what they possess in

after life.

As a preliminary to the study of the semeiology of the diseases of infancy, it is essential that the physician should make himself fully acquainted with the external appearance of the infant, during health: the expression of his countenance, the attitudes of his body, as well as with the physiological condition generally, at the different stages of development, of his several organs, and of their respective functions. It is only from the nature and extent of the deviations from the normal standard, that, in many cases, he will be enabled to appreciate the value of the morbid phenomena that exist, either individually or collectively.

It is but within a very short period, that the physiology of infancy, and the manner in which its organism is developed, have been accurately investigated; and it is curious, that not a few of the phenomena, which writers on the diseases of the early stage of existence, of no very remote date, described as important indications, or results of morbid action, are found to be invariably present in the infant, even

during health.

We have already presented a brief sketch of the condition of the different organs, during infancy, and the manner in which their respective functions are successively brought into action; we need here only remark, that, in the healthy infant, the limbs are uniformly covered with flesh, rounded and plump, and to the touch, present a certain feeling of firmness and elasticity. The skin is soft, flexible, and of a rosy hue; the complexion lively and fresh. The eye, when attracted by any object, has a peculiar quickness and suddenness in its movements; the pupil is usually large when the infant is awake, but often minutely contracted during sleep; and always more or less turned upwards, beneath the upper eyelid. The countenance, when in repose,

exhibits, in the earlier stages of infancy, but little or no expression, except that of perfect calmness; but at a later age, it becomes quickly lighted up, smiling and animated, upon the approach of its parents or nurse, or when attracted by any pleasing object. The surface of the infant is cool; the abdomen full and soft—gentle pressure upon it seeming rather to please, than to cause the slightest uneasiness. The tongue is generally slightly covered with a whitish mucus; the mouth is always moist, and the lips fresh coloured, and often protruding. The sleep of the healthy infant is quiet and profound: it awakes from it cheerful and smiling, and soon demands food. During its waking hours, after, at least, the first month or two, it is inclined to as much activity as its limbs will permit, and exhibits a surprizing springiness and rapidity in all its movements. It delights to be played with and carried about, and, when old enough, to roll and crawl about upon the carpet. In health, infants seldom cry, excepting to express their wants, or in consequence of experiencing some accidental uneasiness or pain, and are immediately quieted upon their wants being gratified, the cause of their uneasiness removed, or their pain appeased. Crying, is not, however, always the indication of either ungratified wants, pain, or disease: - some infants cry repeatedly, being with difficulty appeased, without our being able to detect any apparent cause of suffering, and without any interruption to the full nutrition, and regular development of their bodies.

Every deviation from what we have just given, as the picture of a healthy child, is not, however, to be considered, of itself, an indication of disease. The limbs of an infant may exhibit a certain degree of meagerness—its complexion may be somewhat pallid—its sleep short, or occasionally restless—or many of its waking hours may be passed in crying, without the existence of any positive disease. All changes, however, occurring in an infant, either suddenly or gradually, whether in the ordinary expression of its countenance—in the condition of its body—its habits or disposition—should be looked upon with a suspicious eye, and be the signal for a careful examination into the condition of its several organs; in one or other of which,

some commencing disturbance will, in general, be detected.

Whenever there is observed in an infant, any marked alteration in the countenance, or in the external appearance of the body—an unwonted dulness of the eye—an indisposition to playfulness—a loss of its accustomed gaiety—unusual listlessness—disturbed sleep—uncommon wakefulness—sudden starting in slumber, or awaking with apparent affright—an unusual degree of somnolency—the occurrence of sudden paleness of the face, or paleness alternating with a suffusion of red, more or less deep—increased heat of the hands and feet, or of the entire surface—unusual coldness of the extremities—unaccustomed fretfulness—frequently repeated or prolonged fits of crying, or a marked change in the character of the cry—frequent or constant corrugation of the brow—twitching of the muscles of the face—rejection of the breast, or of food—unusual movements of the head

and limbs—and crying or moaning when the body is moved or handled, are invariably to be considered as the indications of nascent or confirmed disease.

No disturbance or irregularity of function, occurring in an infant, however slight, should be considered as unimportant. The suddenness with which some of the most violent affections of this period of life are developed, and the rapid occurrence of effusion or of disorganization, in the tissues and organs in which morbid action is seated, gives to every indication by which the inception of disease can be detected, even a greater degree of importance than in after life. In their commencement, many of the maladies of infancy may be promptly arrested, by simple remedies, that if allowed to become fully developed, are scarcely within the control of the most judicious and active plan of treatment.

A slight irritation of the gastro-intestinal mucous membrane of the infant, will often, by being suddenly transmitted to the brain, give rise to a violent convulsive attack, or produce some other, and equally serious train of symptoms, which might have been prevented, by the

early detection and removal of the primary irritation.

Not a few, also, of the maladies that occur during infancy, give rise, during their first stages, to so few prominent symptoms, that their existence is often unsuspected, until disorganization of some important organ has taken place, or a sympathetic affection of the brain occurs, and their character and extent are thus revealed, at a period when their cure is impossible. Even in these insidious forms of disease, by a close attention to the countenance, manners, and gestures of the little patient, the physician will seldom fail to detect the presence of morbid action, and make out, with sufficient accuracy, its diagnosis, at a period when it is still within the control of appropriate remedial agents.

The principal sources of diagnosis in the diseases of infancy, are the expressions of the countenance—the gestures—the phenomena of sleep—the mode in which respiration is effected—the cry—the condition of the tongue and mouth—the condition of the surface—the state

of the breath—the evacuations.

1.-Of the Countenance.

The infant's countenance, offers to us the most interesting and the most intelligible page in nature's book. In its calm, we read the health and ease of all the organs,—of all the functions. In its smiles, we read the happiness of body and of mind. In its expressions of uneasiness or pain, we first discover the invasion of disorder or disease. Our attention will probably be first attracted by some undefined change, which it will require a stricter observation to decypher, and associate with its peculiar cause. (Hall.)

Although we cannot go as far as does M. De Jadelot, and assert that, from the movements of the infant's face, we may determine the

location of its diseases, in one or other of the great splanchnic cavities—the disturbed expression of the upper part of the face, the forehead, eyes and brows, indicating disease of the brain, or of the nervous system; the altered features of the middle portion of the face, particularly of the nose, being indicative of affections of the thoracic organs; while the expression of the lower part of the face, the mouth and lips, point to the abdominal region, as the seat of morbid action; yet we are convinced, that from the condition of the countenance alone—often from some indescribable expression of suffering—the observing physician will be able to detect, at once, the existence of disease, and not unfrequently to determine its location.

In most of the diseases of the alimentary canal, the face of the infant is pallid, and exhibits a very peculiar expression of fretfulness or pecvishness— excepting when these diseases give rise to febrile reaction, during the exacerbations of which, the face is more or less flushed. In many of the chronic affections of the digestive organs, especially when attended with disease or functional derangement of the liver, the face and surface generally acquire a dirty brown, or a deep yel-

low liue.

Great paleness of the face, if accompanied with diminished temperature, or alternating suddenly, with flushing and heat, is often the indication of exhaustion; as from profuse diarrhæa: it is likewise frequently observed previously to the occurrence of convulsive attacks,

or of acute meningitis.

In extreme cases of exhaustion, particularly from profuse evacuations from the bowels, as in protracted cases of cholera infantum, the cheeks are cold and pallid, and of a waxy appearance; the eyelids are half closed; the pupil contracted; the eyeball sunk in the socket, and rolled upwards, so as partially to conceal the pupil beneath the upper eyelid; the conjunctiva is injected with dark-coloured blood; the cornea covered with a thin film of mucus; and the orbitar circle is of a livid or dark brown colour.

In the acute affections of the head, the face is usually flushed, some-

what turgid, and hot.

In affections of the respiratory organs, the face is generally of a dusky red, and swoln: and in extensive hyperemia of the lungs, the

lips and cheeks are often of a deep livid hue.

In hydrocephalus, the skin of the face, and especially of the forehead, is tense and shining. The smooth and shining appearance of the skin upon the forehead, is also very generally observed in protracted cases of cholera infantum.

Deep blueness of the countenance, in young children, is indicative of *morbus cæruleus*, arising, as is generally supposed, from an admixture of the venous, with the arterial blood. It usually exists from birth, and is increased in itensity by any exertion of the body.

A sudden contraction of the countenance, especially if accompanied by a sudden motion of the body, and a sharp scream, is generally the indication of some sudden attack of pain, generally of a

spasmodic character. If at the same time, retraction of the abdominal muscles, drawing up of the knees, or a sudden extension of the body takes place, the pain is seated in some part of the alimentary canal. In this case there is, also, a whitish circle often observed about the mouth.

When the painful sensation comes on more gradually, and is more prolonged in its duration, the brows are corrugated, the upper lip is stretched and elevated, and the nostrils become sharp and contracted. The contraction of the brows is usually most marked in pain of the head; sharpness of the nostrils, in painful affections of the chest; and

drawing up of the upper lip, in abdominal pain.

Upon the approach of convulsions, the upper lip is often stretched firmly over the gums, and of a whitish or livid hue; there occurs a slight divergence in the axes of the eyes; there is an unusual upturning of the eye balls, or a singular rotation of the latter, upon their own axes; or a fixed staring condition of the eye, with a rapid contraction and dilatation of the pupils; there is often slight twitchings of the muscles, on one or other side of the face, and a quick alternation of flushing and pallor of the countenance. All these appearances, are not observed to precede every convulsive attack; the occurrence, however, of one or more of them, are sufficient to call attention to the gums, alimentary canal, or nervous system, in order to detect the source of irritation, that, by its removal, the threatened attack may be prevented.

Whenever there exists any great impediment to the freedom of respiration, the nostrils are widely dilated during inspiration, and strongly contracted during expiration, the mouth is held open, and

the lips are often puckered, and always of a livid huc.

In the more severe forms of gastro-intestinal inflammation, the mouth is extended, the lips—often pale, dry, and cracked—are applied closely to the teeth, and the chin has the appearance of unusual projection.

In chronic irritations of the bowels, the nose and upper lip are often tumefied. A peculiar puckering of the corners of the lips, is frequently observed to precede the occurrence of gangrene of the

mouth in children.

The countenance of infants that have been subjected to an almost habitual use of opiates, has a peculiar and striking appearance; the skin is of a sallow or dirty brown hue, and thrown into wrinkles, from the emaciation of all the soft parts beneath it; the eyelids are red and tumid; the eyes dull and watery; the lips dry and pallid, and drawn so as to leave the mouth partially open, and the chin projecting. The whole countenance, presents, indeed, a faithful miniature likeness, of a sickly aged person.

The eyes are usually prominent and suffused, their superficial blood vessels being often minutely injected with blood, in violent paroxysms of crying, and of cough, and in all affections of the respiratory organs,

attended with much difficulty of respiration, as in croup, the more

violent forms of bronchitis, hooping cough, &c.

The pupil of the eye, in infancy, is usually dilated, during health, and it is often closely contracted during sleep, and rapidly dilates upon the child's awaking. The state of the pupil, however, varies frequently, and it is only from its fixed or permanent dilatation, or contraction, that the indications of disease are to be derived.

In the course of most diseases, the occurrence of a fixed dilatation or contraction of the pupil, indicates the extension of irritation to the

brain.

In the early stage of encephalic inflammation, the pupil is, in general, contracted, and, in the last stage, dilated, and insensible to light.

Occasionally the form of the pupil is irregular; this has been observed by M. De Jadelot, in cases of intestinal irritation from worms.

The sudden occurrence of strabismus, in the course of disease, is usually an indication of the occurrence of some cerebral affection, and is then always an unfavourable symptom. Slight irritation of the bowels, as from worms, indigestible food, &c. often gives rise, however, to temporary strabismus.

2.—Of the Gestures.

In infants, old enough to be attracted by surrounding objects or to be played with and amused, the approach of disease is often marked by a total disregard of every thing that had previously pleased them, and an indisposition to motion of any kind; instead of being active and playful when awake, they lie still and listless, upon the nurse's lap, and no efforts to attract their attention, or to excite a smile upon their countenance, are successful. The cooing, cherruping sound, with which they expressed their feeling of satisfaction or delight, gives place to perfect silence, or to a short querulous plaint when moved, or teased by the importunities of those around them.

If the infant had commenced to hold up its head, to sit alone, or to stand, on the approach of disease, there often occurs a degree of muscular debility, which prevents these attitudes from being continued, and the position assumed by the body and limbs, is expres-

sive of extreme langour.

When in suffering, particularly in cases of intense abdominal pain, the infant will often draw up its knees, and bend forward its body, or throw about its limbs in a wildly agitated manner; or, as we have often observed, forcibly extend its whole body, and then suddenly relax it. When one limb is kept motionless, or moved with sudden jerks, particularly if its motion excites the cries of the child, that limb is generally the seat of pain.

If, after an infant has commenced to walk, it is found to apply only the toes of one of the feet to the ground, and to exhibit a gradually increasing limp in his gait, particularly if he complain of pain in one

of the knees, and exhibits uneasiness when that limb is handled, we should suspect the presence of articular inflammation of the hip.

When a child is observed frequently to trip and stumble, in walking, or when as he moves hastily or unguardedly, his legs cross each other; when he stands upright, his knees totter and bend under him, and, when seated, his legs are crossed and drawn up under the seat; particularly, if he exhibit, at the same time, great langour and list-lessness, and complain of frequent pains and twitchings, in his thighs, we may suspect some disease of the lower portion of the spine, probably caries of the vertebræ.

A frequent application of the hands to the head, is, generally, an indication of suffering in this part of the body, the seat of which, is to be detected by other symptoms. A pulling at one of the ears, and violent, often frequently repeated, scratching of the parts in its immediate vicinity, with frequent moans, or short acute cries, is, generally, indicative of otitis. Rolling the head constantly from side to side, as it lies upon the pillow, or bending it forcibly backwards upon the spine, is usually an indication of cerebral disease.

Picking at, or frequently rubbing the nose, is, usually, a symptom of irritation of the alimentary canal; it is a very common indication

of the presence of worms.

Convulsive movements of one or other of the limbs, of the muscles of the face, of one side of the body, or of the voluntary muscles generally, may result from irritation or inflammation, of the brain, or spinal marrow; or they may be produced by an irritation seated in other organs, and transmitted to the nervous centres. Convulsions

are often the precursors of eruptive diseases.

Contraction of the fingers and toes, in consequence of which, the first are forcibly flexed upon the palms of the hands, and, the latter, towards the soles of the feet, whilst the back part of the hands, and the upper surface of the feet, present a soft, puffy swelling, is an indication of convulsions. An opposite condition, or when the fingers and toes are forcibly extended, while the first are semi-flexed upon the metacarpus, and this, at times, upon the carpus, and, in the same manner, the toes, upon the metatarsus, is a common attendant upon laryngismus stridulous.

As early as the fifth or sixth day subsequent to birth, infants are occasionally attacked by spasms of the muscles of the face, lower jaw, or neek, and, in severe cases, there is often a complete fixation of the jaw. This condition, has been attributed to retention of the meconium, or inflammation of the vessels of the cord:—it is more generally, we suspect, produced by a confined and impure air, or certain conditions of the atmosphere, endemic to particular locali-

ties.

During dentition, and from trifling irritations of the digestive canal, infants are frequently affected with slight convulsive movements of the muscles of the face, which give to the countenance an appearance

of smiling. This symptom is frequently the precursor of severe general convulsions.

A rigid extension of the limbs with a turning inwards of the thumbs, and great toes, is, also, often the precursor of a convulsive attack.

When, upon the child being put to the breast, it sucks eagerly for a moment or two, and then suddenly ceases, throwing back the head with an expression of anxiety in its countenance, or rolls the head from side to side, an attack of convulsions is, likewise, to be apprehended.

Weakness or contraction of certain muscles, or partial paralysis,

often mark the formation of tubercles in the brain.

Partial paralysis, as of one leg, is not, however, an uncommon symptom, during dentition, and gastric irritation; although this, in some cases, is a serious symptom, yet, very generally, the paralysed limb, sooner or later, regains its power.

An uplifted step, or staggering gait, and a rocking of the legs, or a total inability to stand erect, are indicative of serious disease of the brain or spinal marrow. These symptoms, are often the precursors

of sudden serous effusion upon the brain.

A sudden increase of muscular activity in young children, with unwonted exhilaration of spirits, and liveliness of manner, denotes increased excitement of the brain, and often precedes acute attacks

of meningial inflammation.

Great restlessness, and frequent involuntary movements of the limbs, are, in general, when they occur in the course of protracted maladies, unfavourable symptoms, and depend upon disease of some portion of the brain.

3.—The Phenomena during Sleep.

In a healthy infant, sleep is calm and profound; the position is, generally, upon the side, with the limbs perfectly relaxed; the respiration is full, slow, regular, and quiet. The eyelids are never forcibly closed, and, not unfrequently, are slightly separated; the cornea is partially concealed beneath the upper lid, the ball of the eye being turned upwards; the pupil is often greatly contracted. The skin is soft and cool.

It is not uncommon in the sleep of infants for imperfect respiration to occur for a time, followed by a deeper inspiration, or sigh, to supply the previous deficiency in the function. This has sometimes been mistaken for an indication of disease; it is, however, a perfectly healthy phenomenon, and results from the reduction of innervation that occurs during sleep. Cutaneous transpiration is always increased during the period of sleep:—if the room in which the infant reposes, is warm, or he is too warmly clad, or covered with too many bed clothes, profuse perspiration, is liable to occur, particularly about the head and neck.

On awaking from sleep, the healthy infant is lively and cheerful,

and quickly seeks the breast or calls for food.

The younger the infant, the greater is the time passed in sleep; after

the first month or two, the intervals of waking and repose become more regular, and the infant will, very generally, fall asleep and

awake, very nearly at stated hours.

During sleep, the countenance of the infant, will, by its expression often give intimation of slight degrees of uneasiness or pain, of which no indication is presented during the period of wakefulness,—the infant's attention being then diverted from slight degrees of bodily suffering, by the various objects, and sounds, that occupy its external senses.

The commencement of irritation in the bowels, or brain, may often be detected by slight twitchings of the mouth and eyelids, or by the grinding of the teeth, that occur during sleep, when no symptom is

manifested while the child is awake.

In the same manner, the approach of disease will be indicated by frequent movements of the body and limbs, and by sudden starts that take place during sleep.

Sleeplessness, when not the result of pain, is usually caused by a morbid excitability of the brain; it is often present during convales-

cence from acute affections.

Sudden starting from sleep, with a wild, alarmed expression of countenance, or without the child appearing, for some time, to recollect himself, or to recognise surrounding objects, is often caused by irritation of the alimentary canal, and may, in many cases, be the precursor of convulsions, or of acute meningial inflammation.

Children often awake from sleep in affright, and quickly burst into tears; at other times, their sleep appears troubled, and, without awaking, the child sobs, or utters words or indistinct sentences; this is, generally, produced by the occurrence of dreams, excited by intestinal irritation, or by the presence of too much or improper food in the

stomach.

An unusual degree of somnolency, in general indicates hyperemia of the brain; it is sometimes observed during teething, or when the stomach is overloaded with food.

Deep soporose sleep, or coma, always indicates serious disease of the brain; and, when it occurs in the course of acute diseases, or suddenly supervenes after protracted illness, is to be viewed as an unfavourable symptom.

Short, disturbed sleep, the infant, on awaking, being fretful, peevish, or morose, is, very generally, an indication of disease of the alimen-

tary canal.

4.—The Cry.

Crying, is the natural language by which the infant expresses its wants and sufferings. During health, an infant, properly nursed, cries but seldom, and never exhibits violent and repeated paroxysms of crying, or the continued plaintiff cry of distress.

In new born infants, loud and vigorous crying, is always an

unequivocal sign of health and vigour; and is, doubtless, produced by the impression upon the body, of the various novel stimuli to which it has become suddenly subjected. After the sentient surfaces have become accustomed to these, the infant's cries proceed from some want, from uneasy sensations or pain, accidentally induced, or from disease.

Violent paroxysms of crying, are usually the result of intense pain; occasionally, however, they are the expression merely of passion; and, when this is the case, the child will often suspend its breath for some time, and the face will become livid from the interruption of the circulation through the lungs.

Violent and prolonged fits of crying, from whatever cause they result, are always injurious, and in some instances, have been imme-

diately succeeded by an attack of convulsions.

A fretfulness of disposition and frequent crying, may be produced from the child being continually vexed and teased by its nurse, without

the actual presence of pain or disease.

Violent, and frequently repeated crying, or shrill and piercing screams, are the indications of acute pain; and are, hence, observed to occur in most of the inflammatory affections to which infants are liable, especially in their early and acute stages. In inflammation of the gums, the cry will be more or less protracted; while in inflammations of the chest and abdomen, the increase of suffering to which they give rise, will induce the child, as much as possible, to control its cries, the cry becomes then, sudden, short, and at intervals; in severe pain of the head, as in the acute stage of meningial inflammation, the cry is often a short, piercing scream, occurring at intervals. The same is the case also in spasmodic pains of the alimentary canal.

To the seat of the pain, we will be directed by the local symptoms. Intolerance of light, contraction of the brows, and tossing of the head, with, often, increased heat of the latter, will point to the brain as its seat. A quick, panting, or difficult respiration, rapid contraction and dilatation of the nostrils, and cough, to the lungs; constipation, diarrhea, or vomiting,—tenderness on pressure, and increased heat of the abdomen, to the alimentary canal; and loud, crowing, and difficult respi-

ration, to the larynx.

When the cry is hoarse or husky, it is an indication of effusion within the bronchii, preventing the free passage of the air to the glottis, or of inflammation and thickening of the mucous membrane of the larynx or trachea.

When the cry has a nasal sound, there is inflammation or enlargement of the tonsils, inflammation and thickening of the Schneiderian membrane, or a polypous tumor at the posterior nares.

The peculiar ringing sound of the cry, is often the first indication of

an impending attack of croup, or of laryngismus stridulous.

When the cry is scarcely audible, and accompanied with a low, sibillent prolongation, there, in general, exists some disease of the glottis.

Fretfulness or peevishness, when habitual, or occurring in children who had previously exhibited a lively and cheerful disposition, may either be the indication of uneasy sensations, resulting from the action of a variety of irritating causes, and the consequent impairment of the general health of the system; of some chronic irritation, seated, most commonly, in the alimentary canal, or of the invasion of acute disease. Habitual fretfulness, or its sudden occurrence, should, there-

fore, never be overlooked.

A low, moaning cry is, in the infant, invariably an important and alarming symptom of disease. In acute affections, the moaning is continued at each expiration. During painful dentition, the infant is often heard to moan, and grind its teeth at intervals. Moaning, is particularly characteristic of painful diseases of the alimentary canal; when it occurs after violent excitement, accompanied with acute screams, and is attended with stupor, it is an unfavourables ymptom, indicating, in general, the early occurrence of effusion from cerebral disease.

5.- Respiration.

In the healthy infant, respiration is full, regular, and quiet; more frequent than in the adult; and performed, almost exclusively, by the movement of the ribs.

Difficult and loud respiration, is present in all the diseases of the pulmonary apparatus. In affections of the larynx, glottis, and upper portion of the trachea, inspiration is performed with difficulty; while in diseases of the bronchii, the difficulty is experienced in expiration.

When the difficulty of respiration gradually augments in intensity, it is an unfavourable indication, in all affections of the lungs. Respiration often becomes irregular, and occasionally intermittent, in the course of pneumonia, and in affections of the brain, and is always an unfavourable symptom.

In pleurisy, and peritonitis, inspiration is rendered short and diffi-

cult, from the increase of pain to which it gives rise.

Difficult respiration, attended with heaving of the upper portion of the chest, elevation of the shoulders, violent exertion of the muscles of the neck, or rapid motions of the mouth and nostrils, is attendant upon serious disease of the thoracic viscera, and is usually the indication of an unfavourable result.

In the healthy respiration of the infant, no sound is heard, unless the ear is applied to the chest; it is hoarse, in bronchial inflammations; it is sibellant, in affections of the larynx, glottis, and upper portion of the trachea; and presents a sighing sound, in hyperemia of the lungs, and in cases of exhaustion, or debility of the respiratory muscles. The sighing sound is an unfavourable indication in acute affections of the brain.

The respiration is very quick and panting in most febrile affections, during the exacerbation; when rare, there in general exists debility

of the muscles of respiration; a quick and rare respiration exists in pleuritis, or it may occur from exhaustion; from violent exertion of the respiratory muscles; in pneumonia, chronic bronchitis, or pleuritic effusions.

The indications derived from auscultation and percussion, are nearly the same in children as in adults, and need not, therefore, be noticed here. The respiratory murmur—puerile respiration—being remarkably loud over every part of the chest in infancy, is not, as in the adult, so important an indication of disease. It is diminished in intensity in inflammation of the bronehial ramifications, and entirely absent in induration of the lungs, and in pleuritis.

Cough may result from disease of some portion of the respiratory apparatus, or it may be caused by irritation transmitted to the respiratory organs from the alimentary canal, or from disease of the brain. In the first case, it is generally attended with mucous expectoration; in the second, it is usually dry and irritative; and in the last, spas-

modic.

A short, hacking cough, with little expectoration, is present in pleurisy, and in the incipient stage of tubercular phthisis. Continued cough, accompanies inflammations of the larynx, trachea, bronchii, and lungs. Intermittent cough is a symptom of croup, laryngismus stridulous, and hooping cough.

In the commencement of inflammations of the respiratory organs, the cough is dry; but is soon accompanied with expectoration, when the disease is seated in the mucous membrane; but in pneumonic inflammation, it continues longer dry, and the expectoration is seldom

copious.

In catarrhal affections, the cough is hoarse; in croup, it has a peculiar barking, or crowing sound; in whooping cough, a loud shricking sound; and in the early stage of bronchial inflammation, previous to the occurrence of effusion within the bronchii, it has a whizzing sound, without hoarseness.

Sneezing may arise from accidental irritation of the Schneiderian membrane, or from irritation transmitted to this part from the alimentary canal. It is one of the prominent symptoms of coryza, in children, arising then from the increased irritability of the nasal mucous

membrane, consequent upon inflammation.

Hiccup is a frequent symptom, in children, of slight irritations of the alimentary canal; it may arise, also, from cerebral irritation, and be then a precursor of convulsions. When occurring in the course of inflummatory affections of the bowels, peritoneum or brain, it is, in general, an unfavourable symptom.

6.—The Tongue and Mouth.

In the infant, during health, the tongue is moist, smooth, and generally covered, in its middle, and towards its root, with a thin coating

of whitish mucus. The mouth is always moist, and of a palish hue, and the gums of a bright red.

When the tongue is loaded with a white curdy matter, disturbance of the digestive process, or slight irritation of the alimentary canal, is generally present.

Increased redness, heat, and dryness of the tongue and parieties of the mouth, indicate the first stage of stomatitis, and often accompa-

ny inflammations of the alimentary canal.

Small white points, or patches, dispersed over the tongue, and parietics of the mouth, are the result of inflammation of the epithelium of these parts, and is usually symptomatic of disease of the stomach or bowels; as a local affection, it may be produced by confined and impure air, want of cleanliness, &c.

Apphæ of the tongue and mouth, are the result of follicular inflammation; they may depend upon improper food and vitiated or confined air; or they may be developed by dentition, or be symptomatic of disease of the alimentary canal.

A pale, flabby tongue, is the indication of great debility or exhaustion. Redness of the tongue is symptomatic of acute inflammations of the gastro intestinal mucous membrane.

In scarlatina, the papillæ of the tongue become enlarged and prominent, presenting numerous red points—the tongue itself is also red, and the throat covered with efflorescence.

Swelling of the tongue occurs in scarlatina, measles, croup, larynitis, and small pox, and is usually an unfavourable indication.

In febrile diseases, and in most of the affections of the alimentary anal, the tongue is covered with a whitish coat. In protracted irritations of the bowels, the coating of the tongue generally assumes a dirty yellow or brownish colour.

Increased secretion of saliva, occurs immediately preceding, and during the process of dentition, in the course of stomatitis, and is a common precursor of the gangrenous affection of the mouth in children.

A diminished secretion of saliva, takes place in most of the acute and febrile affections that occur during childhood. Great dryness of the mouth, with constant thirst, occurring in the course of acute diseases, is generally unfavourable.

Increased heat and redness, with swelling of the gums, occurs at the period of dentition. A dark, red, and tumid state of the gums, generally precedes the occurrence of gangrene of these parts.

Increased redness of the throat occurs in scarlatina, measles, small pox; in inflammations of the tonsils and larynx, as well as in chronic inflammations of the digestive and respiratory organs.

7 .- Of the Surface.

In infancy, the skin, during health, is soft, moist, and cool, and uni-

formly distended, from the large amount of soft, cellular tissue, and sub-cutaneous adipous matter.

Whenever it becomes harsh, dry, and hot, or flabby and wrinkled, it is an indication of the existence of more or less extensive disease,

in one or other of the organs.

A hot, and dry skin, is common in all the febrile and acute affections of infancy; the heat is not, however, always diffused over the entire surface, but is often greater in one region than in the others; thus, in inflammatory affections of the brain, the heat of the head is increased, while the rest of the body may be of its normal temperature, or the lower extremities even cold; in inflammations of the abdominal organs, the increased heat will often be confined to the epigastric, umbilical, or hypogastric regions, or to the surface of the abdomen generally. A dry, burning feel of the palms of the hands, is often attendant upon disturbance of the digestive function, irritations of the alimentary canal, or irritations of the lungs connected with tubercles.

A uniform redness, or rosy hue of the surface, is the indication of health in infancy; when, however, the lymphatic temperament is strongly marked, the skin, particularly of the face, may be pallid and puffy, without the existence of positive disease. Such a condition of the skin, should, however, be always a warning for additional precautions in the hygicnic management of the child, lest a scrophulous condition of the lymphatic glands, or tubercular depositions occur. This state of the skin is common in children who are too much confined within doors, or who are exposed to a damp, stagnant, or impure atmosphere, or fed upon food deficient in nutrition, or of a bad quality; it occasionally presents itself when, after scarlatina and some other diseases, effusion, more or less extensive, takes place in the cellular tissue.

Increased redness of the surface, is either an indication of inflammatory or eruptive diseases of the skin, or it may result from febrile excitement, or acute inflammations of internal organs. Thus, in inflammation of the brain, the face becomes flushed; and in certain diseases of the lungs and digestive organs, a circumscribed redness of the cheeks is not unfrequently observed.

Intense redness of the skin in children, we have known to be produced, in many instances, by certain articles of diet, and to cease the moment these were discharged from the stomach by spontaneous vom-

iting, or the operation of an emetic.

An alternate paleness and flushing of the face, is common in men-

ingeal inflammation.

Intense blueness of the skin is observed in certain cases of malformation of the heart; or it may arise from any cause which prevents the oxygenation of the blood in the function of respiration.

Yellowness of the skin is usually connected with irritations of the alimentary canal, or with some affection of the liver, in consequence of which the serum of the blood becomes surcharged with the colour-

ing matter of the bile; in this case, the adnata of the eye exhibits the same yellow hue as the surface of the body.

In very young infants, yellowness of skin is occasionally produced by an unusual yellow colour of the serum, and in such cases is

seldom a symptom of much importance.

In protracted diseases of the alimentary canal, chronic diarrhea, cholera infantum, &c., the skin assumes a sallow, dirty yellow, or

brownish hue.

The fullness and tension of the surface is increased from hyperemia of the cutis and sub-cutaneous tissues, in eruptive fevers, and local cuticular inflammations. In hyperemia and inflammations of the brain, the integuments of the face are very generally increased in fullness and tension. Tension of the integuments of one cheek, accompanied, at first, with increased redness, and subsequently with a shining whiteness, is an indication of one of the most common varieties of gangrene of the mouth.

Tension of the abdominal integuments, is an indication of inflammation of the abdominal viscera, particularly of the alimentary canal; it may be produced also by the formation of gas within the intestines,

or by effusion within the peritoneum.

General or local tension of the surface of the body, may be produced by the effusion of serum within the cellular membrane generally, as in anasarca, or in some particular portion of it, as in ædema, it is then distinguished by the diminished temperature of the surface, wherever the effusion occurs; by the pitting upon pressure, and by the paleness of the skin.

A reduction of the fullness and tension of the skin, may be produced by the action of cold, or by deficient food, or it may result from emaciation, resulting from protracted disease. In scrous diarrhea, and

the cholera of infants, it often occurs with great rapidity.

Perspiration is readily excited in children;—during, or immediately succeeding a violent attack of coughing, of convulsive paroxysms, and of intense pain of the bowels, it is a common occurrence, for a copious perspiration to break out, about the head and facc. A general moisture of the surface, occurring in acute diseases, with an abatement of their respective symptoms, is, in general, a favourable indication; but when the perspiration is local, being confined to the head and face, it is, in general, an unfavourable symptom. A cold, profuse perspiration, with sunken eyes, a livid hue of the countenance, and short, slow, imperfect respiration, is a sign of great prostration, and is always an unfavourable occurrence.

The natural odour of the sweat is acid; in the miliary cruption, the acidity is very decided. In particular forms of cutaneous cruption, the sweat presents a very peculiar and characteristic odour.

Many of the cutaneous eruptions are indicative of disease of the alimentary canal, and other organs, or they may depend on simple derangement of the digestive process. Thus the several species of strophulus, prurigo, urticaria, and erythema, result, in general, from

improper, or too much food, an unwholesome condition of the mother's or nurse's milk, acid food or drinks; from certain articles of food caten at improper seasons, as fish; from food of too stimulating a character, and, in certain constitutions, or in particular conditions of the stomach, from articles of food not generally esteemed unwholesome, as strawberries, honey, &c. Many of these eruptions are

attendant upon the process of dentition.

Herpetic and crythematous eruptions, and pemphigus, are very generally connected with disease, either acute or chronic, of the digestive organs. The occurrence of ecthyma is often favourable in the acute affections of the intestinal canal; and herpes labialis in all febrile and acute diseases. Minute vesicular cruptions occur in chronic diarrhæa, and in protracted cases of cholera infantum. Petechiæ are common, in many of the intestinal diseases of children; they are usually an unfavourable symptom.

Roseola may arise from irritation of the digestive tube, or it may

occur in the course of cattarrhal and other complaints.

Itching and prickling of the skin, are produced by gastric derangements or intestinal irritation. Itching of the nose is a common symptom of intestinal worms, and itching of the orifice of the rectum of the presence of oxyurcs. An itching and tingling of the skin, often precede the occurrence of exanthematous diseases.

8 .- The Breath.

The breath of a young infant has often the smell of the breast milk; occasionally its smell is slightly sour; it is generally, however, during the entire period of infancy and childhood, destitute of any peculiar odour.

Every decided change in the odour of the breath, is the indication of disease of the mouth, nostrils, or digestive apparatus; or of dis-

turbance of the digestive function.

When the breath of an infant is decidedly acid, it is usually in consequence of an imperfect digestion of the food, and hence the occurrence of an acid breath is generally accompanied, sooner or later, with diarrhæa or cholic.

In the diseases of the alimentary canal, and in the febrile affections of children generally, the breath has a peculiar smell, difficult to

describe, but when once observed, always readily recognised.

A fætid state of the breath may arise from worms, from ulcerations of the nose, mouth and throat, and from gangrene of the gums or cheek. It is present, also, in small pox, and the latter stages of the more violent forms of scarlatina anginosa.

A rancid smell of the breath is, ordinarily, the result of indigestion,

from overloading the stomach with animal food.

9.—Discharges by Vomiting and Stool.

Infants at the breast often vomit from mere repletion of the stomach with milk; a greater amount being sucked than the stomach can digest. The vomiting, in this case, is beneficial, and is favoured by the peculiar position and structure of the stomach, during the first months of existence. The milk thrown up is unchanged, or partially coagulated.

Vomiting, however, may be induced by some disturbance of the digestive process; the milk discharged, in this case, being decidedly acid. Repeated vomiting, is, in general, however, an indication of disease of the alimentary canal, and is often accompanied with purg-

ing.

In certain cases the caseous portion of the milk is retained in the stomach, undigested, in the form of a hard, tenaceous coagulum; and gives rise often, to gastrodynia, cholic, and even convulsions; when discharged by vomiting, an almost immediate relief of all the unpleasant symptoms induced by its presence in the stomach is experienced.

Almost incessant vomiting, increased upon any thing being taken into the stomach, the discharges being decidedly acid, and often of a green colour, is a symptom of gastro-malacia, or that form of stomachic disease of children, terminating in a gelatiniform softening of the coats of the stomach.

Vomiting occasionally attends the process of dentition; it very generally ushers in an attack of scarlatina, and not unfrequently terminates the violent paroxysms of spasmodic cough, in severe cases of pertussis.

Vomiting, attended with increased bilious discharges from the bowels, is common in infants during the heat of summer, particularly at the period of weaning, or during dentition:—when violent and protracted, and accompanied by repeated—almost constant discharges of a yellowish or colourless fluid, from the bowels, it constitutes the cholera infantum.

Frequent vomiting, attended with gradual, sometimes rapid, emaciation, is common in infants who are deprived at an early period, of the breast, and attempted to be reared upon other food.

Vomiting is occasionally symptomatic of diseases of the brain, and

is often one of the indications of incipient hydrocephalus.

In early infancy, repeated evacuations from the bowels, occur in the course of the day; and during the whole period of infancy and child-hood, the evacuations from the bowels are much more frequent than in after life. Increased evacuations, are then also, in general, much more readily produced from trifling errors in diet, and slight degrees of irritation of the intestinal mucous membrane. The period of teething is very generally accompanied by increased discharges of thin mucus from the bowels.

Diarrhœa in children may arise from improper, or too much food, he irritation of teething, irritation or inflammation of the intestinal canal, the action of cold, and from increased acid secretions in the stomach, the effect of functional derangement, or disease of that organ. When profuse or long continued, it often proves fatal by the great

exhaustion produced.

Immediately after birth, the discharges from the bowels are of a very dark green or black colour—the meconium. During the early period of infancy the discharges are of a soft, curdy consistence and appearance, occasionally tinged with bile and without fœtor; during the remainder of infancy and childhood, they are more or less soft, and of a yellow or light brownish hue.

Frothy, acid discharges from the bowels, of a light yellow, or slightly green colour, indicate a disturbance of the digestive function

generally from over-feeding, or improper food.

Discharges of slimy mucus occur in irritations of the bowels, from worms or teething; or in consequence of an increase of the mucous exhalation from the follicles of the intestines, caused by the impres-

sion of cold upon the surface.

Frequent discharges of vicid mucus, occasionally streaked with blood; or of a greenish fluid, mixed with small masses resembling the curd of milk, are frequent in most of the inflammatory affections of the bowels.

Profuse and frequent discharges of thin or frothy fluid, nearly colourless, and devoid of fætor, mark the occurrence of cholera

infantum.

A deep green colour of the stools, the discharges resembling chopped grass or spinnage, is generally a symptom of serious disease of the stomach or intestines, and is a striking feature in gastro-malacia, and the more acute grades of gastro-intestinal inflammation.

In chronic diarrhea the stools are thin, dark brown, and often

intolerably fætid.

In cases of worms, and in certain cases of intestinal irritation from other causes, the discharges from the bowels consist occasionally of a slimy fluid of a whitish colour, resembling milk.

Light brown or clay-coloured stools, are, in general, the indication

of hepatic disease, attended with a diminished secretion of bile.

Worms are occasionally passed with the stools, during the latter period of infancy, and in childhood, without any symptoms having been present to indicate their existence.

been present to indicate their existence.

A diminution in the number of stools, when diarrhœa occurs as a symptom of the diseases of children, and a return to the ordinary healthy condition in the colour and consistency of the discharges, is a favourable symptom.

The appearance of natural faces in cases of dysentery, and of bile in the discharges in infantile cholera, is a favourable indication.

Blood is occasionally observed in the discharges of children, in hyperemia, irritation and inflammations of the mucous membrane; it is generally mixed with mucus or fæcal matter, and never occurs in any great quantity.

The passage from the bowels of the substances taken as food,

entirely unchanged, or but little altered, is an indication of excessive irritability of the alimentary canal; it occurs occasionally in inflammations of the stomach and bowels, but more frequently in protracted

cases of cholera infantum, and chronic diarrhoa.

Constipation is not unfrequent in the early stages of infancy, and in many cases appears to be constitutional, and in others to depend upon the quality of the mother's milk. We have frequently known several days to pass, and no evacuation, by stool, to occur, in a young infant; without, apparently, any inconvenience, until an effort to discharge the contents of the bowels occurred, when the violent straining, and the pain attendant upon the passage of dry, hardened masses of fæces, were particularly distressing to the little patient. Constipation should, therefore, never be overlooked, as it may be the means of inducing violent cholic, invagination, or inflammation of the intestines.

Constipation often exists in the early period of many of the acute affections of infancy, particularly of the head and chest; it may arise, in some cases, from functional derangement, or disease of the liver, preventing the free secretion of bile. Constipation is, not unfrequently, induced in infants and young children, by the imprudent use

of opiates.

In very young infants, the retention of the meconium occasionally gives rise to a deep comatose condition, terminating, if not speedily relieved, in asphyxia and death, while in other cases partial or general convulsions have been known to arise from this cause.

10.—The Urinary Discharge.

The condition of the urine, during infancy and childhood, affords but little important aid in the diagnosis of the seat or character of morbid action. In most of the acute febrile affections the urine is high coloured and scanty, and its passage often attended with some degree of pain. It is often white in intestinal irritation from the presence of worms, and in hydrocephalus.

In irritation of the gastro-intestinal mucous membrane, it is fre-

quently of a bright yellow or deep orange hue.

Incontinency of urine is frequent in children at all ages; it may simply depend upon the extreme irritability which the mucous membrane of the bladder possesses during infancy, from an augmented secretion of serous urine, in consequence of a derangement of the renal function, or, from neglect on the part of the child of the sensations incident to the natural call to urinate, in consequence of which, the command of the will over the action of the bladder and its sphincter, is lost. It occasionally results from irritations seated in the lower portion of the intestinal canal; and in some cases, from disease of the brain or spinal marrow. An excessive amount of limpid, watery urine is often voided by infants and children, and is indicative of a disordered state of the

digestive function from improper food; it often occurs at the period of weaning, and is occasionally attendant upon dentition. The increased flow of urine in children, is said to be, occasionally, diabetic.

When pain and difficulty are experienced in urinating, it is indicative of inflammation of the kidneys, neck of the bladder, or urethra; or of calculous concretions in the ureters, bladder, or urethra. It may originate, however, from irritations seated in the rectum, or of the digestive organs generally. In young children, scanty and painful urination occurs from disease of the kidneys, connected, most generally, with long continued intestinal disease, or with some affection of the brain. In these cases, the urine is passed only in small quantities, and is usually high coloured, and stains the linen yellow. (Schönlein.—Jahn.—Klose.—Sachse.)

Retention of urine is occasionally present during difficult dentition. In very young infants it is sometimes produced by some peculiarity of the mother's milk. We have known it, also, to be a symptom of

worms in the rectum.

Scanty urine occurring towards the decline of scarlatina, and other acute exanthemata, is in general connected with dropsical effusion within the abdomen or in the cellular tissue.

11 .-- The Bones.

A premature, or very rapid development in the longitudinal dimensions of the long bones, particularly, if, at the same time, there is not a correspondent but rather a deficient development in the dimensions of the chest, very generally indicates a predisposition to tubercular disease of the lungs.

A rapid increase of the osseous structure in length, is a very frequent occurrence, towards the decline or immediately after fevers, especially the febrile exanthemata. With this direction of the nutritive process, the development of rachitis and tubercles, so generally consequent upon rapid growth, would seem to be connected. (Schill.)

Curvatures of the long bones of the lower extremities, are often the result of too early attempts to induce the child to walk; of a bending or imperfect fracture of the bones from violence; this occasionally occurs in the upper extremities, from imprudently lifting an infant by the arms. Curvature of the bones, is also one of the symptoms of rickets.

Curvatures of the spinal column in young infants, are sometimes the result of placing them too early in the sitting posture; in children they may arise from debility of the spinal muscles, or disturbed equilibrium in their action, the result of improper positions of the body, too long continued, and defective exercise. Curvature of the spine is, also, the effect of rickets, and of caries of the vertebræ.

Lengthening of one of the lower extremities, exists as a symptom of the second stage, and a shortening of the extremity, of the third

stage of hip disease.

Enlargement of the articular extremities of the long bones is common in scrophula and rickets. Enlargements of the larger joints occur sometimes, after the acute exanthemata, or upon the sudden repulsion of chronic eruptions.

Excessive development of the skull, is a symptom of hypertrophy of the brain; it also takes place in hydrocephalus, and in rickets. In idiocy there is commonly a very decided diminution in the develop-

ment of the skull.

A diminished development in the capacity of the chest, or a flattening of the ribs at the sides, with undue projection of the sternum, predisposes to tubercular disease of the lungs. ON

THE DISEASES OF CHILDREN.

PART II.



A PRACTICAL TREATISE

ON

THE DISEASES OF CHILDREN.

SECTION I.

DISEASES OF THE DIGESTIVE ORGANS.

CHAPTER I.

DISEASES OF THE MOUTH.

1. STOMATITIS.—INFLAMMATION OF THE MOUTH.

Erythematic Stomatitis.

ERYTHEMATIC inflammation of the mucous membrane of the mouth is a common disease in infancy. It may be confined to the tongue, or to a portion of the parieties of the mouth; or it may be universally diffused over the entire cavity. It varies in intensity in different cases—in some being so slight as scarcely to attract the attention of the child's attendants, and disappearing promptly—in others assuming considerable severity, and causing severe suffering to the little patient for many days or weeks, and by extending to the æsophagus and stomach, or into the larynx and trachea, may even prove finally fatal.

Simple erythematic inflammation of the mouth is characterized by increased heat and redness of a part, or of the whole of the parieties of the mouth, and surface of the tongue, accompanied with more or less dryness of the parts affected. The sensibility of the inflamed membrane is increased, and pain is experienced by the inflant, when the part is touched, and in the motions of the tongue and lips in the act of sucking.

The first indications of the disease are, in general, the fretfulness and restlessness manifested by the infant, its suddenly quitting the nipple after sucking for a few moments—or when fed by the hand, refusing its food, and crying when this is attempted to be forced upon it.

When the redness extends over the whole surface of the mouth, it often spreads to the lips, which tunnefy, excoriate, and crack, and not

unfrequently are affected with herpes labialis.

In very young children, the disease is seldom attended with febrile reaction; but when it occurs at the period of dentition, it is frequently accompanied by some degree of fever. When erythematic inflammation of the mouth occurs about the period of dentition, and is of any

duration, it is often attended by profuse ptyalism.

Simple crythematic stomatitis may occur as an idiopathic disease, or it may be symptomatic of a diseased condition of the alimentary canal. In the first case, it may be produced by exposure to cold, by too hot or stimulating food, by the violent exertion of the tongue and muscles of the mouth, in attempting to derive nourishment from an over-distended breast, from a too small or badly formed nipple, or, finally, it may result from the irritation of the mouth, consequent upon dentition.

In its simplest form, crythematic stomatitis is seldom a very violent or obstinate disease, and is very promptly relieved by simple emollient washes, as a solution of the pith of sassafras or the inner bark of the slippery elm in cold water; if of any degree of severity, it may be necessary to apply a leech or two at the angle of the jaws. In aggravated cases of the disease, we have derived advantage from washing the parts affected with a weak solution of acetate of lead in water. (Three grains of the acetate of lead to one fluid ounce of water.)

When the inflammation of the mouth is symptomatic of irritation or inflammation of the alimentary canal, it will, in general, yield to the operation of the remedies adopted for the removal of the latter.

2.—Erythematic Stomatitis with curd-like exudation.

A common result of erythematic stomatitis is the secretion of a white matter, which appears, usually, in the form of small points or patches, resembling minute portions of curd, adhering to the surface of the inflamed membrane; this is particularly the case in infants at the breast. It constitutes the muguet of the French writers, the thrush or children's sore mouth of nurses; and the aptha lactumina and aptha infantiles of the older physicians.

This form of crythematic stomatitis is among the most common of the affections incident to the early stage of infancy, and many nurses are under the impression, that if it does not occur within the month, the infant is rendered liable to some other form of disease, at a later period, which it might have escaped, had it gone through

"the sore mouth," at the proper period.

By most pathologists, the affection, under consideration, has been confounded with apthæ. From the latter it differs, however, in many important particulars.

Its occurrence is most commonly confined to the period of suckling. In many cases, it is preceded by no very striking symptoms; the in-

fant is, however, generally, peevish and fretful, and exhibits more or less pain and difficulty in sucking, and often abruptly quits its hold of the nipple, or cries when attempted to be applied to it, or to be fed with artificial food; occasionally, there is considerable languor, or even drowsiness, and not unfrequently more or less disturbance of the stomach and bowels; if the mouth be now examined, the whole of its cavity will be found red, hot, and preternaturally dry. After a day or two, sometimes within a few hours, small white points make their appearance at the extremity, or on the sides of the tongue, or at the angles, and on the inner surface of the lips. These points have the appearance of minute fragments of curd, adhering to the parts mentioned, which latter are of a dark red colour, hot and dry.

In mild cases, the inflammation, in a short time, disappears; the particles of white curdy matter becoming detached, fall off, and leave

the membrane beneath of a smooth and healthy appearance.

If the inflammation continues unabated, the points of curdy matter increase in number, and often extend over the whole surface of the tongue and mouth, or a number of the points unite together in the form of patches, often of considerable thickness, upon the tongue, or the inner surface of the lips and cheeks; these patches sooner or later become detached and fall off, and their place is quickly supplied by a new exudation; and this separation and renewal of the patches is repeated, so long as the inflammation continues. In other instances, however, the patches formed upon the tongue, the inside of the lips and cheeks, coalesce, and the whole of these parts become covered with a whitish, granulated crust, which often extends into the fauces, pharynx, and in some cases, into the larynx.

The general symptoms, connected with this form of stomatitis, vary with the degree of intensity in the local disease. When the latter is mild, and of short duration, the child is fretful, or dull and peevish; he exhibits pain from the action of the mouth in sucking, or upon taking food, especially that which is warm or in the slightest degree stimulating. In general, the surface of the body is hot and dry, and

the thirst is increased.

In the more aggravated forms of the disease, there is often great restlessness, alternating with drowsiness; disturbance of the stomach and bowels, and other symptoms, dependent upon the affection of the alimentary canal with which the inflammation of the mouth is associated.

The duration of the disease is various; in slight cases, it terminates in a few days; in other cases, it may continue much longer without producing any very severe or alarming symptoms. Excepting, when complicated with inflammation of the alimentary canal, it is usually

a troublesome, rather than a dangerous affection.

In those cases, in which large patches of exudation form upon the inside of the lips or cheeks, or upon the velum, the disease, particularly, in situations where a number of children are crowded together in ill-ventilated apartments, occasionally assumes a malignant character, and is attended with very considerable danger. The patches of exudation acquiring a dark colour—the breath becoming fætid—the submaxillary glands enlarged and painful—the face swollen and of a dusky red—the lips and gums becoming tumid, and bleeding upon the slightest touch—while a fætid sanious saliva flows constantly from the mouth—diarrhæa often, also attends, the discharges being dark-coloured and highly offensive—the surface of the body becomes dry and hot, the child sleepless and restless; finally, the patient sinks; death being occasionally preceded by a deep comatose condition.

The usual causes of this form of stomatitis, are bad or improper food, a neglect of cleanliness, and confined and impure air. It is often produced by the bad quality of the mother's milk, or by feeding the child with food unadapted to the condition of its digestive organs; children, prematurely weaned, seldom escape an attack of it. It is very prevalent, also, in public institutions where many infants are

crowded together; especially, in small, illy ventilated rooms.

By some writers, it has been supposed to be communicated by contagion. We know of no facts, however, in support of such an opinion. Baron and Billard positively deny its contagiousness; while Girelli has known healthy infants to become attacked by suckling from the same breast with those affected with the disease; and a similar statement is made by Marley. This fact may, however, be very readily explained by the deteriorated condition of the nurse's milk, without the necessity of admitting the communication of the disease by a contagious matter, derived from an infected infant, and communicated

by the nipple it has sucked.

The true character of the affection, under consideration, appears not, very generally, to be understood. By the majority of medical writers, it has been confounded with apthæ, in connection with which it occasionally occurs. Breschet, Guersent, Veron, Lélut, and Billard, have studied both diseases with great care, and it is evident from the result of their observations, that, while apthæ are the result of follicular inflammation, stomatitis with curd like exudations, is an ervthematic inflammation, giving rise to an altered secretion from the inflamed surface, which may occur in the form of small curd like particles or flocculi, or, as in other diptheritic inflammations, of large patches of a soft pseudo-membranous matter, which Lélut has attempted to show is analogous to, or identical with the false membrane of croup:—Billard terms it coagulated mucus, and Guyot mucus rich in fibrine. Upon the separation of these morbid exudations, the membrane beneath is found to be smooth, and without solution of continuity; this fact we have tested in numerous examinations. According to Guersent, the morbid curd like exudation, is deposited beneath the epithelium, and its separation is consequent upon the rupture of the latter:—Plumbe is of a similar opinion. Guyot and Billard, however, never saw it, excepting upon the surface of the epithelium, and this accords with our own observations.

There is some dispute as to how far this morbid exudation extends

beyond the mouth and fauces. It is generally admitted, that, in severe cases, it has been found in the coophagus, as far down as its cardiac orifice; but while some, including Billard, have asserted that it has been observed throughout the whole tract of the alimentary canal; others, with Veron, maintain that, in no instance, has it been known to occur beyond the coophagus—the curd like crusts, occasionally found in the stomach, being conveyed thither from the mouth, by deglutition. Guyot gives a case, in which the disease was detected, after death, throughout nearly the whole tract of the intestines. We have not had many opportunities ourselves of examining, after death, the condition of the alimentary canal in infants, who were affected with stomatitis with curd like exudation; but in the few we have examined, we were never able to trace the disease beyond the coophagus:—a simi-

lar statement is made by Dewees and Eberle.

The treatment of erythematic stomatitis with curd like exudation, will depend very much upon the extent of the local affection in each case, and of the morbid condition of the alimentary canal, with which it is accompanied. In the milder cases, the frequent application to the parts affected, of some emollient wash, as directed in simple erythematic inflammation, will be sufficient, with proper attention to the food of the child, the daily use of the warm bath, and exposure to a dry and pure atmosphere of a proper temperature, to effect a cure. In the more severe and obstinate cases, M. Guersent advises a fourth part of chloride of soda to be added to the mucilaginous wash, and Billard a small quantity of alum; while Dr. Darling speaks in the highest terms of the solution of chlorate of soda, as one of the best means of subduing irritations of the lining membrane of the mouth and fauces. The application, which we have found the simplest and most successful, is the biborate of soda and white sugar—equal parts—rubbed together; a small portion of which, being occasionally sprinkled on the infant's tongue, it soon becomes dissolved by the saliva, and applied to every part of the mouth; or the biborate of soda may be mixed with honey, in the proportion of one part of the former to six or eight of the latter. Some practitioners prefer a solution of biborate of soda in water, with the addition of a fourth part of alcohol, sweetened with honey or sugar; in many cases, we have found the most decided good effects result from the weak solution of acetate of lead, noticed when speaking of simple erythematic stomatitis. Whatever washes are used, great care should be taken in their application, to avoid all harsh rubbing, or indeed, any degree of friction of the inflamed membrane of the mouth.

In that form of the disease, in which large patches of curdy exudation occur, these may be touched with a mixture of hydrochloric acid and honey, and when the exudation assumes a gangrenous aspect, a wash of chloride of lime, or of a strong decoction of Peruvian bark with chloride of soda, a mixture of creasote and mucilage, or of vinegar and alcohol, or a solution of nitrate

of silver, may be employed, and repeated at shorter or longer intervals, according to circumstances.

- Acid. Hydro. chlorid. 3j. Mellis et aquæ Rosæ, aa 3j.—M.
- c Decoct. cinchonæ, Ziij.
 Syrup. cort. aurant, Zi.
 Sodæ chlorin. Zj.—M. (Guersent.)
- e Aceti, Jj.
 Alcohol. Jiij.
 Syrup. simpl. Jj.
 Aquæ, Jiij.—M.

- b R.—Mucilag. acaciæ, Zj.
 Calcis chlorin. gr. xv. ad xxx.
 Syrup. cort. aurant, Zss.—M. (Angelot.)
- d Creasot. gtt. iv.
 Mucilag. acaciw, 3ss.
 Aq. Camphoræ, 3viij.—M.
 Agent. nitrat. gr. iv.
 Aquæ, 3i. ad 3ii.—M.

In even the mildest forms of the disease, acidity of the alimentary canal, and some degree of diarrhæa, are often present; in such cases occasional small doses of magnesia and rhubarb with ipecacuanha, will be found advantageous. In all the more severe cases, alterative doses of calomel, combined with magnesia or prepared chalk and ipecacuanha, will be demanded; and in those, in which the exudation in the mouth assumes a gangrenous aspect, quinia should be administered.

- Magnes, calcinat, 9j.
 Rhei pulv. 9j.
 Ipecacuanhæ pulv. gr. j.

 M. f. ch. No. iv. One to be given daily or oftener.
- b Calomel. gr. ij. ad iij. Magnes. calc. vel Cretæ ppt. gr. xxxvj. ad ∂ij. Ipecacuanhæ, gr. iij.—M. f. ch. No. xij. One to be given every two or three hours.
- Aq. puræ, ʒiij. Sulph, quiniæ, gr. viij. ad xij. Sulph. acid. dilut. gr. xv. ad xx. Syrup. simpl. ʒj.—M. A tca spoonful, every two or three hours.

When combined with disease of the alimentary canal, this is to be treated by its appropriate remedies.

3.—Follicular Stomatitis.

APTHÆ.

Follicular inflammation of the mouth, is a frequent disease of infancy and childhood, and constitutes the affection ordinarily described as $apth\omega$, by medical writers. It is more commonly observed about the period of dentition, than at an earlier age; and it is especially liable to occur, in children in whom the lymphatic temperament predominates, or in whom hæmatosis is rendered imperfect, by improper or unnutritious food, a damp and cold, or impure and stagnant atmosphere, exclusion from the light, and neglect of cleanliness. It is likewise a common occurrence in most of the chronic affections of the intestinal canal.

The disease usually commences by the occurrence of a few small, white specks on the inner surface of the lips and cheeks, and upon

the sides and inferior surface of the tongue, and often over the greater part of the soft palate. These specks are slightly elevated, and usually surrounded by a red circle, more or less decided. They may be few in number, and irregularly dispersed over the angles and inner surface of the lips and cheeks; or they may occur in groups upon the lips, cheeks, and sides of the tongue; or may cover every portion of the cavity of the mouth; extending, in some cases, into the cesopliagus, and even throughout the alimentary canal; and in others, penetrating into the pharynx, and according to some writers, into the trachea.

The inflammation of the follicles, will often continue for some time, without making any further progress; or, as often happens, the disease may be arrested in its first stage, and the mucous membrane of

the mouth return to its natural condition.

If, however, the inflammation proceeds, the specks enlarge, a whitish matter exudes from their centre, and ulceration takes place; a superficial ulcer then occurs, with slightly elevated edges, and surrounded by a circle of inflammation. From these ulcers, there is often secreted a white, curdy matter, adherent, at first, to their surfaces; but subsequently becoming detached, is either swallowed, or ejected with the saliva of the infant.

When the apthous ulcerations are numerous, and in close contact, the curdy exudation spreads from one to the other, forming a layer,

often of considerable thickness and extent.

Occasionally, instead of a curdy excretion, there exudes from the ulcers, a small portion of blood, which forms upon them a dark-coloured crust, that has not unfrequently been mistaken for a gangrenous slough.

Upon the disappearance of the inflammation, the ulcerated follicles

readily cicatrize, without leaving any permanent scar.

When the apthous crusts, formed by the ulcerated follicles, become detached and fall off, they are often succeeded by others, which, in their turn, become detached; and thus, in protracted cases, the crusts are detached and renewed, for several successive times; or only a portion of the crusts are detached, while the general layer of curdy matter continues adherent for weeks.

Follicular stomatitis is occasionally attended with scarcely any other than the local symptoms. The little patient is generally, however, fretful and peevish; his skin is dry, and its temperature increased; there is an augmentation of thirst; often some degree of diarrhæa; and an evident indication of pain and tenderness of the mouth, by the child when sucking, suddenly leaving off and crying. Even when the disease of the mouth is more extensive, fever is seldom present, excepting towards its close, or when it occurs after the period of infancy; but even then, fever is absent in many cases.

When the follicular inflammation involves nearly the entire extent of the lining membrane of the mouth, the general symptoms are usually much more violent. There is then great restlessness; considerable pain is experienced in the act of sucking; the infant seizes the nipple eagerly, but instantly relinquishes it, and expresses its suffering by its cries; the mouth is dry and hot, but in the course of the disease, there generally occurs a profuse ptyalism, with painful intumescence of the salivary glands; the nipple of the nurse quickly experiences a sense of heat and irritation, producing excoriation and excessive tenderness; the child is troubled with frequent acid eructations, and repeated watery discharges from the bowels, of a green colour, attended with severe griping; vomiting is apt to occur from an early period of the disease, particularly upon any thing being taken into the stomach; the surface of the body becomes pale; the countenance exhibits considerable peevishness or distress; emaciation quickly ensues, and is often extreme; the child is wakeful; occasionally great restlessness is alternated with dullness, or some degree of stupor. In some cases the disease is ushered in by great drowsiness. As the disease advances, the discharges from the bowels increase in frequency, though diminished in quantity. The verge of the anus becomes excoriated and inflamed; and in some instances we have seen extensive erysipelatous inflammation of the nates to ensue. The abdomen is generally swollen, and occasionally tympanitic; and there is more or less tenderness of the epigastrium. Gangrene of the mouth occurs in some cases; but in general, the patient dies from exhaustion, or from inanition in consequence of the entire suspension of the digestive functions of the stomach and bowels.

When the disease extends to the esophagus, there is usually great difficulty of swallowing; and when propagated to the larynx, the cry

of the infant becomes harsh and sibbilant.

Occasionally, the apthous ulcerations become gangrenous; their edges shrink, and assume a ragged, flabby appearance; a brownish-coloured slough forms in their centre, which, on separating, leaves a granulated surface, of a vermillion hue; or, in place of a slough, the ulcers become covered with a brown, creamy fluid, that exhales a very decided gangrenous odor. The parts surrounding the ulcers become tumid, soft, and of a violet colour. From the half-open mouth of the child, is discharged a ropy—often fætid—saliva. The countenance becomes pale and puffy; the pulse is feeble; and the entire surface of the body, pallid, and deficient in sensibility; frequent vomiting, profuse diarrhæa, and a tympanitic condition of the abdomen, generally occur; and occasionally hiccup, and frequent eructations; and the child finally dies without febrile reaction, or cerebral excitement. (Billard.)

This termination of the disease is very generally fatal: we may, however, attempt to arrest the progress of the gangrene, by the use of the chloride of soda, or creasote, and the internal use of quinia. Billard directs the application of a drop or two of sulphuric or hydrochloric acid, by means of a capillary tube, to the gangrenous apthæ; and afterwards, touching the remaining gangrenous parts, with a pencil of nitrate of silver, sharpened to a point, at the extremity.

Follicular stomatitis, most commonly occurs in infants of a relaxed habit, with predominance of the lymphatic system. It may be produced in infants at the breast, whose digestion is impaired, from the want of an adequate supply of milk on the part of the nurse, or from the milk of the mother or nurse, being deficient in its nutritious properties, or of a bad quality. It more frequently occurs, however, in infants who are attempted to be nourished upon other food than the milk of a healthy nurse; or who have been prematurely deprived of the breast. Improper or deteriorated food, is, indeed, among its most common exciting causes. In infants at the breast, apthæ may result from their being at the same time imprudently fed, on thick, farinaceous substances; pap; paste, composed of flour boiled with milk; crackers soaked in milk—especially, if over-sweetened, or with brown sugar or molasses.

Children born before the full period, or of weakly women, are said to be more liable to apthous inflammation of the mouth, than children born at the regular period, or of robust, healthy mothers. (Dewees.) The infants of delicate females, sometimes suffer considerably from this affection, by the mothers persisting in suckling them, even when assisted by what is supposed an adequate quantity of spoon-victuals; but as soon as all attempts at suckling are abandoned, and the infant is confined, entirely, to other appropriate and wholesome food, the disease disappears, and the general health rapidly improves. (Plumbe.)

The tendency to the disease is increased by whatever tends to impair the general health of the infant, and impede hæmatosis; as a neglect of personal cleanliness, and to removing, daily, with a piece of soft linen, and fresh water, the sordes which collect in the mouth of the infant; an impure and confined, or a cold, damp atmosphere; exclusion from the light; neglect of exercise; and allowing the child to sleep constantly with its face covered, and thus to breathe an air contaminated by its own respiration, and often by the emanations from its parent's or nurse's body. (Underwood.) Follicular stomatitis is also a common occurrence, in the course of nearly all the prolonged affections of the alimentary canal, that occur during infancy and childhood. The severer forms of the disease are more liable to prevail in low, damp situations. Van Swieten, and subsequent writers, notice apthæ of the mouth, as prevailing to a considerable extent, in various parts of Holland; and Hecher describes a severe variety of apthæ, as very common in a part of Germany. The disease likewise prevails, in its more aggravated forms, in many of the public institutions of Europe, for the reception of infants.

It is said, occasionally, to occur as an epidemic; and by many writers, is supposed to be communicated by contagion:—Frank declares this to be the case, when the matter is applied immediately to the mucous membrane of the mouth; and Girelli states, that in the foundling hospital of Brescia, he has known the disease to be communicated to healthy infants, who had been suckled at the same breast with one labouring under apthæ:—Moss mentions the same

fact, and Burns remarks, that it would appear to be produced by sucking an exceriated nipple: this we have seen to occur in numerous instances.

There has existed not a little difference of opinion, as to the true character of apthæ. Many of the older writers, describe them as a vesicular eruption. Among these are Van Swieten, Arnemann, Callisen, Plenck, Etmuller, and Pinel. Among the more recent writers who regard them as vesicular, are Rayer, Bateman, Dendy, Girelli, and Evanson. Andral divides them into three species, the papular, vesicular and pustular; Gardien describes them as tubercles; and Guersent, Billard, Guyot, Marley, and others, as an inflammation of the follicles of the mucous membrane of the mouth, presenting two stages; the first, consisting of small, white, miliary tumors; the second, of superficial ulcers. This latter view of the disease, we are led, from our own observations, to believe to be the correct one.

There can be little doubt, that the apthous inflammation, frequently extends into the pharynx, esophagus, and even, in severe and protracted cases, through the entire extent of the alimentary canal. Numerous accurate observations attest this fact. The excoriation of the anus, which is usually adduced, to prove the extension of the disease, to the lower portion of the intestinal tube, however, affords no evidence of such being the case: in the majority of the instances in which the excoriation occurs, it is evidently produced by the acid and irritating nature of the discharges: it is a frequent occurrence,

also, in cases where no apthæ are present.

Many writers speak of this disease as never occurring again, after a first attack. This is unquestionably a mistake; and one which, in all probability, has originated from confounding it with stomatitis with curd-like exudation, which is a disease seldom, if ever, met with, excepting in young infants:—follicular stomatitis, we have known to

recur more than once in the same individual.

The treatment of the early stage, and milder forms of follicular stomatitis, differs in nothing, from that already recommended in simple erythematic inflammation of the mouth; namely, simple, mild mucilaginous washes, frequently repeated. At the same time, it is all-important that the child should be placed in a pure, fresh, and dry atmosphere, of a proper temperature;—if at the breast, and any suspicion is entertained, of the insufficiency or bad qualities of the nutriment thence derived, the breast of a healthy nurse should be substituted for that of the mother; or if the infant be weaned, its food should consist, almost exclusively, of barley or rice water, sweetened with loaf sugar. Care should be taken, to preserve the perfect cleanliness of the surface, and to promote the functions of the skin, by the daily use of the warm bath, followed by gentle frictions. The thirst, which generally attends the disease, should be allayed, by presenting to the child, frequently, in the course of the day, a few spoonfuls of cold water, in which a small portion of gum arabic has been dissolved. This is peculiarly grateful and refreshing to the little patient; and by some it has been considered, in conjunction with the daily washing of the mouth with cool, fresh water, as a very powerful means of preventing the occurrence of the disease. An occasional dose of magnesia, or of magnesia and rhubarb, will, in general, be required, and will tend to remove, in part, the acid, which generally abounds in the stomach and bowels.

When the disease extends over a considerable portion of the mouth, and is attended with great pain, as indicated by the uneasiness and cries of the child in the act of sucking, a few leeches should be applied to the angles of the jaw. Billard advises in such cases, the addition of syrup of poppies, to the mucilaginous washes, in the proportion of one or two drachms of the former, to two ounces of the mucilage. We have derived much advantage from a weak solution, in water, [three or four grains to the ounce,] of acetate of lead.* In cases attended with considerable stupor, a blister to the back of the neck, has been found beneficial. (Girelli.) After ulceration has occurred, a good—probably the best—local application, is the biborate of soda and sugar, applied in the form of powder, as directed for stomatitis with curd like exudation.

When the apthæ remain stationary, or become confluent, the addition of a few drops of sulphuric or hydrochloric acid to the mucilaginous wash, will be often beneficial; or the mouth may be washed with the chloride of soda. Eberle recommends, as a wash, a solution of nitrate of silver, one grain to an ounce of water; and Billard advises the ulcers to be touched with a piece of alum. We have seen the most decided good effects, in obstinate cases, from the use of a weak

solution of the sulphate of copper, as a wash.

When the disease is attended with frequent watery discharges, and griping pains of the abdomen, it has been recommended by some of the German writers, to administer, internally, a solution of biborate of soda. Pitshaft (Hufeland's Journal) declares, that in severe cases of apthæ, one of our most effectual remedies, is the biborate of soda, (two to four grains) combined with the carbonate of magnesia, (five to six grains), repeated two or three time in the twenty-four hours. We are in the habit of employing, in these cases, a combination of acetate of lead, calomel, ipecacuanha, and extract of hyoscianus. Under the use of this combination, the irritation of the bowels is very often quickly diminished, the griping stools suspended, and the general symptoms of the case improved.

*Acetat. plumbi, gr. vj. ad xij.
Calomel, gr. iij.
Ipecacuanhæ pulv. gr. ij.
Ext Hyosciami, gr. iv. ad vj. M. f.
Chart. No. xij.

One to be given every three or four hours, according to circumstances.

^{*}Acctate of lead is recommended by Stoll, as a local application, in cases of apthæ, on the authority of "certain English physicians," and by Latham, in what he terms, Cachezia Apthosa. Of the perfect safety with which it may be employed, in this manner, and of its good effects, in allaying the pain and inflammation, in cases of apthæ in children, our own experience has fully satisfied us.

In cases attended with inflammation of the bowels, leeches to the epigastrium, warm, emollient fomentations to the abdomen, and the other remedies applicable to such inflammation, are to be resorted to, in conjunction with the local treatment already recommended.

Care should be taken, throughout the disease, to keep the parts about the anus, perfectly clean. The diaper should be removed, immediately after every stool, and the nates, and orifice of the anus, carefully washed with an infusion of the bark of slippery elm; and after being well dried, the parts which appear red and irritated, may be smeared with a little perfectly fresh lard. When the irritation is considerable, the occasional use of a wash of a weak solution of acetate of lead, will be found advantageous.

In cases of apthæ attended with evident prostration of strength, without any acute disease of the alimentary canal, some light tonic, as the cold infusion of cinchona, or the sulphate of quinia, may be

administered.

In prolonged cases of apthous ulceration, the use of iodine, and other alteratives, with change of air, and a well regulated diet, will, in many instances, by restoring the nutrition of the system to a healthy condition, effect a cure.

4.—Ulcerative Stomatitis.

Independently of the apthous ulcerations just described, the mouths of children are liable to be the seat of ulcers, resulting from acute phlegmonous inflammation of the lining membrane of the mouth. They may occur at any part of this membrane, but are usually situated on the sides of the frenum, along the inferior margin and edges of the tongue, on the gums, the inner surface of the cheeks, and the palatine arch. They seldom occur upon the upper surface of the tongue.

The disease usually commences with some degree of febrile excitement, indicated by increased heat and dryness of the surface, augmented thirst, lassitude, and restlessness. The infant exhibits unusual fretfulness—lets go the nipple when it has commenced sucking, and indicates the painful state of its mouth, by its cries: on examining the mouth, one or more small, inflamed, and slightly elevated points are perceived, the apex, or central portion of which, in the course of a day or two—often within a much shorter period—become softened, and of a yellowish hue, and, finally, a small ulcer is formed, at first superficial, but gradually exhibiting greater excavation, and often an inflamed and elevated margin. The ulcerated surface is usually covered with an ash-coloured or yellowish matter, but is occasionally bare, and readily bleeds.

When the ulcers occur upon the upper surface of the tongue, they are usually superficial, having the appearance, rather, of slight exco-

riations.

After ulceration has taken place, there is, in general, profuse ptyalism, and a subsidence of the febrile excitement.

The bowels are, in general, costive at first, but become loose, and

often purged in the course of the disease.

In some cases, but one or two ulcerations of no great extent, are present, which, after a short time, fill up with granulations, and rapidly cicatrize; in other cases, however, the ulcers are more numerous; sometimes thickly studding the inside of the cheeks, the gums, the arch of the palate, and both sides of the base of the tongue; in other cases, again, one or two ulcers will occur, which slowly extend in size and depth, and exhibit no disposition to heal; the little patient, at the same time, wasting away with a species of hectic fever, with exacerbations night and morning.

Denis describes a species of ulceration, caused by a softening of the mucous membrane of the palate, and which invariably occupies its centre either on the median line, or on the outside of this line. The mucous membrane is changed into a kind of pulp, and is of a red, inclining to a fawn colour. If the pulpy matter be removed, the edges of the ulceration are found to be perpendicular, with the bare bone at the bottom of the ulcer apparently in a healthy condi-

tion. This affection we have never observed.

Ulcerative stomatitis frequently occurs during dentition, and is a common disease in children labouring under a disordered state of the digestive organs, with a costive or irregular state of the bowels, variable appetite, offensive breath, inertness of disposition, a pale

puffy complexion, and hard, tumid abdomen.

The treatment differs but little from that directed for apthous ulceration. When unattended with serious derangement of the digestive organs, simple mucilaginous washes for the mouth, and, when the bowels are confined or irregular, a small dose of calomel, followed, in the course of a few hours, by a dose of castor oil, with the tepid bath daily, and a plain, unirritating diet, will, in general, promptly effect a cure. If, however, the ulcers are tardy in healing, they may be washed with a solution of borax in water, (15 grains to the ounce); or with the chloride of lime, or a weak solution of nitrate of silver (one grain to the ounce); or of sulphate of copper (5 grains to the ounce). According to Dr. Dewees, the following wash has never failed to quickly arrest the ulceration.^a

* R.—Sulph. Cupri, gr. x.

Pulv. Cinchonæ, Zij.

"G. Acaciæ, Zi.

Mellis, Zij.

Aq. puræ, Ziij.—M.

With this wash the ulcers are to be touched twice a day, with the point of a camel's hair pencil.

When accompanied with extensive derangement of the alimentary canal, the proper remedies adapted to the removal of the latter will be demanded. In many cases, indeed the ulcerations of the month will be found to resist every local application, until the digestive organs are

restored to a healthy condition, and the nutrition of the system generally is improved.

5.—Gengivitis.—Inflammation of the Gums.

The gums, from the period when dentition commences, until the completion of the first set of teeth, are liable to become inflamed, independently of the residue of the buccal cavity. In some cases, the inflammation is but slight, and of short duration; but in others, particularly when it occurs in children whose general health has become impaired, in consequence of a deranged state of the digestive organs, the inflammation is often severe, and productive of extensive ulceration, by which the alveola and teeth, are often entirely destroyed. This disease has very commonly been confounded with scurvy of the gums.

The gums become of a deep red or livid colour, swelled and painful; the tender state of the gums, rendering mastication difficult, and often causing even spoon victuals to be refused. The child is, in general, very languid, with a hot and dry skin, a small and quick pulse impaired appetite, and considerable thirst. The tongue is, generally, covered with a thick yellowish fur. The patient's sleep is seldom much disturbed, and in some cases, there is increased somnolency.

When the inflammation occurs, as it frequently does, previously to the protrusion of the molar teeth, a small ulcer occurs upon the surface of the gum, immediately over the teeth about to protrude, and, quickly extending, often lays bare the alveola, and the teeth become destroyed. In other cases, the ulceration occurs at the edge of the gum, and extends rapidly downwards. In every case in which the ulceration is allowed to go on, the teeth become loose, black, and carious, and are often reduced to a soft, pulpy state. When ulceration takes place, there is always a copious flow of fætid saliva, the breath becomes extremely offensive, and the countenance of the child, assumes a pale sallow hue; a bloody fluid oozes from the gums upon the least pressure, and often a very profuse diarrhæa ensues.

This disease is very often produced, by too much, or improper food, particularly that which is of too stimulating a nature; and it is, very generally, attended with more or less—often with very extensive

-derangement of the digestive organs.

In the early stage of the complaint, the proper remedies are, mild emollient washes to the gums, with, twice or thrice a day, a wash of a solution of acetate of lead, (five grains to an ounce of water,) applied by means of a soft sponge, or dossil of lint. If the inflammation is not promptly reduced by these means, a few leeches should be applied to the angles of the jaws, or to the gums themselves. Some writers advise the gums to be freely scarified, and, in many instances, we have seen advantage to result from this procedure.

The bowels should be freely opened by the administration of a few grains of calomel, combined with magnesia, and followed, after

a few hours, by a dose of castor oil, or sulphas sodæ; the tepid bath should be administered daily, and the child put upon a diet com-

posed entirely of milk and farinaceous substances.

When ulceration has taken place, and the inflammation of the gums is diminished, some light astringent wash will be beneficial; an infusion of oak bark, with alum, we have found peculiarly advantageous; the chloride of lime, will, also, in many cases, speedily arrest the ulceration; or, we may employ, as a wash, diluted hydrochloric acid. We have often found a solution of the sulphate of copper to succeed, however, when other topical applications have failed.

*R.—Corticis Querci, 3j.
 Aquæ, Oss.
 Boil to a pound and strain, then add—Sulph. Alumin, 9i.

To be applied to the ulcerated parts by means of a soft sponge, or dossil of lint, several times a day.

b R.—Acid. Hydrochlor. Iss. ad, Ij. Mellis, Aquæ Rosæ. āā. Ii.—M.

To be applied three or four times a day.

The child should be exposed to fresh, pure air, and be supplied with a nourishing, easily digested, and perfectly unirritating diet.

When the ulceration of the gums is very extensive, and the strength of the child is evidently impaired, the cold infusion of bark, or the sulphate of quinia may be administered; and will often, very materially accelerate the healing of the ulceration of the gums.

It is important that the teeth which have become destroyed by the

disease, be early removed.

The disordered state of the alimentary canal, will demand, of course, its appropriate remedies.

6. - Gangrene of the Mouth.

(CANCRUM ORIS—GANGRÆNOPSIS—KANKER OF THE MOUTH—WATER KANKER.)

Gangrene of the mouth, is not a disease of so frequent occurrence in this country, as it would appear to be in many parts of Europe; it, nevertheless, does, occasionally occur, and has, in more than one of our public institutions for the reception of infants, prevailed endemically.

Gangrene may ensue in either of the forms of stomatitis already noticed; and, occasionally, in the follicular form, it forms one of the

most unmanageable and fatal of its terminations.

It is, however, in cases of inflamed gums, occurring in children of lax and debilitated habits, of a strongly marked lymphatic temperament, or the energies of whose organic functions, have been impaired by previous disease, that gangrene of the mouth most frequently occurs.

The patient is, in general, affected with great langour and listlessness. He is indisposed to engage in play, or even to move about; but is peevish and discontented, and unable to sleep; he has no appetite for food, but, in general, his thirst is increased. His countenance becomes pale and dejected, and a peculiar puckering of the

cheeks, about the corners of the mouth, is often observed.—(Richter.) There is, in general, considerable emaciation, and nocturnal sweats. In the course of one or two weeks, the patient begins to complain of sharp pains in his mouth and gums; his breath becomes, more or less, fætid, and there is an increased discharge of saliva. A sense of itching, or pricking, and heat is experienced in the gums, which become of a dark red, or purple hue, swollen, and spongy, and bleed upon the slightest touch. The discharge of saliva becomes more profuse, accompanied, often, with a slight discharge of dark coloured blood, and a tumid and painful condition of the salivary glands. The odour of the breath, and appearance of the gums, at this stage of the disease, bear so strong a resemblance to those of a case of mercurial ptyalism, that we have known physicians of skill and experience mistake it for such.

The disease being allowed to proceed, the edges of the gums, most generally those of the inferior jaw, separate from the necks of the teeth, and present a ragged, flabby, and livid aspect. The teeth become loose, and often fall out of their sockets; or, if they remain, become covered with a thick coating of mucus of a dirty

white or ash colour.

Fever, now, generally occurs; at first, towards evening, and attended by an increase of the nocturnal sweats. The bowels are, also, often

affected with diarrhœa.

The disease may continue in this state for many weeks, or even months.—(Wepfer.—Coates.) Usually, however, in the course of a few days, a number of ash coloured vesicles appear upon the gums, which rapidly enlarge in size, coalesce, and, finally, rupture, the denuded gum presenting a black and gangrenous appearance. When the dead portions of the gum separate, the ulcer which occurs, assumes, immediately, a gangrenous appearance, and, very rapidly, the entire gum becomes destroyed, and the whole of the alveola, and, sometimes, the greater part of the inferior maxillary bone, are laid bare:—the alveola are, generally carious, portions of which, with the teeth, are separated and thrown off.

From the gums, the gangrene, sooner or later, extends to the lips and cheeks, which become more and more swollen, as the disease

increases in extent.

At this stage of the disease, and sometimes much earlier, a difficulty is experienced, in moving the lower jaw, in consequence of which, the mouth becomes firmly closed.—(Richter.) This, Reimann has erroneously considered to result from an actual tetanic affection; it is, evidently, altogether the result of the intumescence of the soft parts, and the pain which is consequent upon any effort to move the jaw.

In the course of a few days, should the little patient not sink under the disease at an earlier period, which is generally the case, the whole of the soft parts surrounding the mouth, will become involved in the disease, assuming a dark livid colour, and discharging a putrid

sanies, of a most offensive odour.

The fever, which now often augments in intensity, presents a nervous, or hectic character, and the child dies upon the eighth, or, at furthest, on the fourteenth day from the commencement of the gangrene, his body presenting all the indications of a general colliquation.

The disease just described, is, evidently, a gangrene of the gums, extending thence to the surrounding soft parts, and induced by acute inflammation of the parts, occurring in children in whom the organic energy has been reduced, either by bad or deficient food, long continued exposure to an impure and stagnant, or a damp and chilly atmosphere, or by previously existing disease, particularly of the digestive organs.

It is that form, which, according to Richter, prevails endemically in the asylums and hospitals for children, and in low, damp situations,

bordering upon the sea.

There is, however, another form of gangrene of the mouth, of much less frequent occurrence than the former, and differing from it in many

important particulars.

In this there is no preceding inflammation of the gums; but the disease, which commences in the soft parts surrounding the mouth, often at one of the angles of the lips, generally makes its appearance, as it were, abruptly; without, at least, any previous symptom, indicative of its occurrence. A hard indolent tumor, about the size of an almond, is, commonly, first observed, in some part of the lips or cheeks; the tumour is deeply seated, and accompanied by a slight degree of redness of the skin by which it is covered. Upon examining the mouth, nothing unusual is discoverable. In a few days, the tumor gradually augments in size, and the skin becomes of a deeper red; the internal surface of the cheek, over the tumor, assumes a gangrenous appearance, and an extremely offensive odour is exhaled from the mouth. Exacerbations of fever, generally occur towards evening; the appetite, and disposition of the child, is seldom, however, much affected.

If the disease be allowed to proceed, the external circumscribed redness of the lip or cheek, soon becomes paler, livid, then of a greyish hue, and surrounded by a red areola, which extends, as the disease progresses. In a few hours, frequently, the grey spacelated

portion becomes completely black.

If the mouth be now examined, it will be found, that in the immediate neighbourhood of that portion of the lip or cheek at which the disease commenced, the gums are in a state of gangrene; the teeth here become loose, covered with an ash coloured mucus, and, finally, drop out.

The affection of the gums, is, in this form of gangrene of the mouth, secondary to that of the cheek or lip, and does not occur until that

has made considerable progress.—(Richter.—Jackson.)

Necrosis of the maxillary bone, is seldom observed in the variety of gangrene just described; death, usually taking place, from a general

sinking of the powers of life, previously to any very extensive destruc-

tion of the soft parts.

A much milder form of the disease is described by Richter, many cases of which have fallen under our notice. In this, circumscribed spots of gangrene, of a dark brown colour, surrounded by a red margin, and of various size, occur suddenly upon the lips, near to their angles, and upon the cheeks; the general system of the patient remaining apparently unaffected. In some cases, the gangrenous spots, are preceded, one or two days, by a slight redness of the skin where they occur. The gangrene is always superficial, involving little more than the skin, and but little loss of substance is presented when the sloughs separate; a supuration of a healthy character quickly ensues, followed by granulations and cicatrization. Occasionally, when the gangrene occurs at the commissure of the lips, it affects the entire thickness of the latter; the slight loss of substance which ensues, is, however, speedily filled up by granulations, and little or no deformity ensues.

These mild cases usually occur subsequently to attacks of some of the acute exanthemata; indeed, the disease in this form, according to some writers, succeeds to acute affections of the skin, as small pox, measles, scarlatina, &c., where these have run an irregular course, or have, by any means, been suddenly arrested during their evolution (*Richter, Baron, Romberg.*) We have seen it more frequently, however, in children who have laboured for some time under symptoms of irregular intermittent fever, dependent upon

chronic gastro-intestinal irritation.

A third form of gangrene of the mouth, and the one which next to that consequent upon acute gengivitis, we have the most frequently met with, in private practice, is that in which the gangrene commences

upon the centre of the internal surface of one of the cheeks.

Its occurrence, is in general, like the last described variety, sudden. The patient becomes, all at once, unusually restless and peevish; and affected with slight accessions of fever. If closely observed, some intumescence of one side of the face will be detected. The disease is occasionally, however, ushered in by nausea, vomiting or diarrhæa. One of the cheeks becomes quickly swollen, hard, dark red and shining; as the external swelling augments in size, and the skin is greatly distended, the centre of the tumor often assumes a perfectly white and shining appearance; the eyelids at the same time become edematous; an increased flow of saliva takes place, and the breath acquires a very peculiar fætid odour. If the mouth be now examined, one or more greyish vesicles will be perceived upon the internal surface of the affected cheek, which, after some days, rupture, and form an ulcer of a dirty grey colour, of a rounded form, with red, distinctly circumscribed edges; and at the same time, a slight excoriation or fracture of the skin, often occurs at the angle of the mouth on the affected side.

This form of gangrenous ulceration of the mouth is not always immediately detected, and is occasionally entirely overlooked, by

those unacquainted with the disease. The whole of the attention being directed upon the external swelling. There is, in fact, some difficulty in making an accurate examination of the inner surface of the check, from the difficulty the little patient experiences in opening his mouth to a sufficient extent, after the external swelling has ac-

quired any size.

As the gangrenous ulceration within becomes deeper and more extended, a livid spot, surrounded by a red areola, makes its appearance on the external surface, at the spot where the tumefaction is the greatest; this soon acquires a darker hue, and augmenting in size, involves, in the course of from four to eight weeks, nearly the whole of the soft parts on that side of the face. Portions of it are soft and of a grey or greenish hue, and present all the characteristics of humid gangrene, while other portions are completely mumified, hard, and of a deep black colour.

If the gums be now examined, they will be found in a gangrenous condition, immediately opposite to where the gangrene commenced on the cheek, while in every other part they are apparently sound:—the gangrene of the gums being in this, as in the last variety, a consequence of the preceding mortification of the cheek (Richter, Jackson, Guersent, Heuter), whereas, in the first variety, the gums are the part in which the gangrene commences, the jaw being frequently

destroyed previously to the cheek becoming affected.

In the progress of the disease, the functions of the alimentary canal become deranged, the appetite of the patient is destroyed; his thirst augments; nausea and vomiting often occur; the diarrhea becomes more copious, the discharges being thin, dark coloured, and offensive; the skin of the body is dry and hot, while that of the extremities is colder than natural; the abdomen becomes tympanitic; the patient falls finally into a soperose condition, and death speedily ensues.

In our own practice, this variety of gangrene of the mouth has most usually occurred in children who had for some time been affected with disease of the gastro-intestinal mucous membrane, attended with febrile symptoms of a remittent or intermittent character. In no case, however, in the cases which fell under our care, did the gangrene involve the whole thickness of the cheek. In every instance, we were enabled to arrest its progress, before it had extended beyond the mucous membrane lining the cheek in which it had commenced, and a small extent of the gums, in the immediate neighbourhood. It may be, however, that the cases we have seen, were, even in their carlier stages, of a much milder character than those described by the European writers.

Gangrene of the mouth, is an affection almost exclusively confined to the period of infancy. It may occur at any time between the first and tenth years, but is most commonly observed between the second and fourth. Few, if any, cases have been met with in infants during the period of lactation.

The children in whom gangrene of the mouth most usually occurs, are, those of delicate habits, of a lymphatic temperament, with

soft and flaccid muscles, and pale skin, and in whom the functions of assimilation and nutrition have been depressed, from a variety of morbific influences. (Richter.) In no instance, has the disease been known to occur, in children of a robust, and healthy constitution. It is seldom met with, excepting among the children of the poor, who are imperfectly fed, or upon food of an improper quality; those who are exposed to the influence of a damp and chilly, or impure and confined atmosphere; in whom personal cleanliness is neglected, or who have become reduced by some severe acute affection, particularly of the skin, or have suffered from chronic disease of the stomach and bowels.

It is a disease of frequent occurrence in public institutions, where a number of children are crowded together, in small, low, or illy ventilated apartments. Hence, in the asylums and hospitals, destined for the reception of children, the disease frequently occurs as an endemic. In the Children's Asylum of Philadelphia, there was, at one period, among the two hundred and forty inmates of the institution, seventy affected with gangrene of the mouth.—(B. H. Coates.)

As the children of the poorer classes in Europe, who live upon the borders of the sea, are exposed, at one and the same time, to most of the predisposing causes of gangrene of the mouth, it is, in consequence, an affection extremely prevalent in Holland, Sweden, Denmark, Norway, and in many parts of England, Ireland and Scotland.

The influence of long continued exposure to a damp climate, and the constant use of unwholesome food, in the production of the disease, are sufficiently established by the report of the physicians attached to the French army which occupied Spain, they having to treat, frequently, a gangrenous inflammation of the mouth which occurred among the soldiers, and which received from the Spaniards, the name of fegar or fegarite.—(Richter.)

Gangrene of the mouth is, no doubt, in the majority of instances, intimately connected with gastro-intestinal irritation. The causes which have been enumerated, evidently predispose to the disease, by disturbing the healthy condition of the stomach, and other organs appropriated to digestion and assimilation, and to nutrition generally.

The disease is mentioned by more than one writer, as having prevailed epidemically in the Netherlands, as a consequence of gastric fevers. (Thomassen and Thyssen.) In all of Poupäil's cases, seventy-two, the disease followed an attack of intermittent or remittent fever; in nine of the cases reported by Dr. Jackson, of Northumberland,* the disease occurred in the course of, or subsequent to, an attack of remittent or bilious fever. Dr. Marshall Hall, states, that in all the cases he has seen, the disease succeeded to disorders of the digestive organs, typhus fever, or some inflammatory affection; and in all the cases which have fallen under our notice, the affection of the mouth, had been preceded by, more or less, decided indications of

gastro-intestinal irritation; in the majority, the children had suffered, for some time, from the infantile remittent and intermittent fevers.

Another fruitful cause of the disease would seem to be, the acute exanthemata; an imperfect crisis, or sudden repulsion of the cutaneous eruption, appearing to favour, in an especial manner, the development of gangrene of the mouth.—(Richter, Thomassen and Thyssen, Huxham, Cummins, Baron, Wendt, Fischer. Siebert, Romberg.)

By a few of the writers on gangrene of the mouth, its propogation by contagion, is asserted. But of this, no well authenticated instances have been recorded. In every case, however, as a prudent precaution, it will be proper to separate, as much as possible, the individuals affected, from those in health, as well as from each other. A number of patients labouring under gangrene of the mouth, being confined in the same room, cannot fail, even with every precaution in regard to cleanliness and ventilation, to render the disease, to a certain extent, more unmanageable, than when the patients are placed in separate and distant apartments.

Few examinations of the lesions presented by the internal organs, in the children who have died of gangrene of the mouth, are upon record; and of the few that are reported, the majority appear to have been performed with very little accuracy, so that of the pathological

anatomy of the disease, we know but little.

In the examinations we have made, which, however, have been very limited—for we have had the good fortune to lose but few of our patients—the principal organs in which morbid appearances were present, were the stomach, intestines and liver. In all the cases, the two former presented the indications of inflammation, of a more or less chronic character; the latter appeared to be affected with hyperæmia, rather than any structural change. In the majority of cases, the mesenteric glands were greatly enlarged.

In the examinations made at the Children's Asylum, between June 1st, 1827, and January 1st, 1830, the morbid appearances exhibited, were enlargement and hardening of the mesenteric glands; a scrophulous condition of the glands of the neck, and, in every instance, tubercles of the lungs. In general, the whole substance of the lungs was thickly studded with tubercles, in various stages of inflammation and suppuration. The condition of the gastro-intestinal mucous membrane

is not recorded.

Richter remarks, that every physician who has had an opportunity of treating the gangrene of the mouth in children, agrees that it is one, which, if not entirely beyond the control of medical treatment, speedily produces, in at least the majority of cases, the death of the patient. It is certainly true, that when the disease occurs in illy constructed and erowded asylums for children, or in any situation in which the patients remain constantly exposed to a confined and impure, or a damp and chilly atmosphere, or when it occurs in children, greatly exhausted by previous illness, that the disease is one very generally fatal. When too, its real character is misunderstood; when it is

overlooked in its first stages, or treated by inert or improper remedies,

death can very seldom be prevented.

We have not found the disease, in any case in which we have been enabled to treat it in its early stages, so difficult to cure, as most of the European writers describe it to be. We have, indeed, seldom failed in arresting, very speedily, the progress of the gangrene. This is also the experience of Dr. Coates, who had the charge of the Children's Asylum of Philadelphia, previously to the year 1828, and of his successor in that institution; where, although the disease has frequently prevailed epidemically, it has been productive of a very small mortality. With a judicious treatment, early commenced, the disease would appear to be even more manageable, than many of the other severe affections of childhood.

The period when the treatment is commenced, is, however, all important to ensure its success. This perhaps, more than almost any other circumstance, will determine, in the majority of cases, the greater or less mortality.—When the physician has been enabled to detect it at the period of its development, he will, very generally, be able to arrest its further progress, and to save the life of his

patient.

It is remarked by many writers, that when the gangrene commences by a tumor or livid spot upon the cheek, it is very generally under the control of medicine.—(Muys, Lund, Seibert, Klaatsch, Reimann, Jackson.) We have not, however, found the other forms of the disease to be less so.

According to Richter, when the gangrene of the mouth occurs subsequently to affections of the alimentary canal, it is of a less malignant character than when it succeeds to diseases of the skin, or to

fever, in children of a scorbutic habit.

Upon the true pathological character of gangrene of the mouth, much difference of opinion exists among the writers who treat upon it. That the first variety we have described, is the result of inflammation of the gums, no one can doubt, who has examined the disease with care; and, according to Richter, the two other varieties, also, result from an inflammation of the parts in which they first occur—an opinion which we believe to be well founded.

By others, gancrene of the mouth has been ascribed to inflammation of the lymphatics, (Bidloe); to a softening of the affected tissue, similar to what takes place in the stomach, uterus, brain, and other organs, (Klaatsch and Hesse, Weigand, Boer); to a scrophulous affection, Chevlocace, (Lentin); to a scurbutic affection, (Van Sweiten, Seibert, and most of the older writers); and finally, to an induration of the cellular tissue from infiltration, similar to what occurs in new born infants, (Fischer, Billard.)

In the majority of cases, the treatment of gangrene of the mouth consists simply in the application of remedies, adapted to arrest the further progress of the local disease. When, however, we are called in previous to the occurrence of gangrene, in many cases, much may

be done to prevent its occurrence, by adapting our remedies to remove

the existing predisposition.

Whenever it can be accomplished, the patient should be subjected to the influence of a dry and pure atmosphere; the strictest cleanliness, of both person and clothing, should be enjoined, together with a diet, perfectly unirritating and easy of digestion, and adapted, in respect to the substances of which it is composed, to the actual condition of the digestive organs in each case. If the gums be in a state of inflammation, the remedies directed in the section on that disease should be resorted to. In the great majority of cases, more or less disease of the stomach and alimentary canal generally, will be found to existthis is to be treated by its appropriate remedies; recollecting, however, that alterative doses of calomel, even when indicated by the symptoms present, are to be employed with the utmost caution, in every instance in which we have reason to apprehend the occurrence of gaugrene of the mouth—for there can be no doubt that the disease has, in many cases, been developed by the incautious use of mercury. When cautiously prescribed, and their effects are carefully watched, small doses will, nevertheless, often be productive of beneficial results.

In a few instances, we have found the administration of the sulphate of quinia, and washing the gums repeatedly with a strong decoction of oak bark, to be beneficial in preventing the occurrence of gangrene of the mouth, in cases in which we had every reason to anticipate its speedy occurrence. In every case in which decided symptoms of local inflammation exist, leeches to the part will be proper. When tumefaction of the cheek occurs, blisters over the tumor have been,

also, found beneficial.—(Jackson.)

The remedies that have been employed locally, with the view of arresting the progress of the gangrene, are very numerous. All of them are reported to have succeeded in the hands of some physicians,

while in those of others, they have entirely failed.

The wash or lotion which we have found by far the most successful, is a strong solution of sulphate of copper, applied very carefully, twice a day, or oftener, to the full extent of the gangrenous ulceration. A solution of the sulphate of zinc, (one drachm to an ounce of water,) either alone or with the addition of tincture of myrrh, will be found, in many cases, an admirable remedy. Nitrate of silver was the only local remedy employed in the cases of gangrene of the mouth, that occurred in the Children's Asylum of Philadelphia, from June 1st, 1827, to January 1st, 1830, the greater portion of which terminated favourably. As soon as the disease of the mouth was detected, the nitrate of silver, either in pencil or solution, was applied, freely, to the parts affected.

aR -Sulph. cupri, Zij. Aquæ, Ziv. - M.

tR.—Sulph. Zinci, Zi.

Aquæ, Zij. M. et solv.

Dien adde mellis,

Tinc. Myrrh, aa Zij.—M.

Or, R.—Sulph. cupri, Jij.
Pulv. cinchon. Iss.
Aquæ, Jiv.—M. (Coates.)

Creasote was found to be an admirable local application in the gangrene of the mouth, which occurred, as an epidemic, in the Philadelphia almshouse, in 1838, incisions being first made through the gangrenous sloughs. (Dunglison.)

* R.—Creasot.

Alcohol. aā \(\mathcal{T} \)ss.—M.

To be applied by means of a pencil.

In the Children's Hospital at Paris, cauterization of the gangrenous spots with hydrochloric acid, and afterwards covering them with powdered chloride of lime, with the use of tonics—generally the syrup of cinchona, given per anum,—is said to have proved a very success-

ful mode of treating the disease. (Baudelocque.)

The hydrochloric, sulphuric, and acetic acids, have all been highly recommended, as local applications, in this disease. Van Swieten employed the hydrochloric acid, twenty drops to half an ounce of honey, or when the case was of an aggravated character, the acid alone, and invariably found the extension of the gangrene to be arrested, and the dead parts to separate in a short time; it was equally successful in the hands of Seibert, and is spoken of in terms of commendation by Bernstein, Richter, Jadelot, Boyer, Baron, and others. Henter considers one of the best local applications to be, a mixture of hydrochloric and acetic acids.

The application of sulphuric acid has succeeded in effectually arresting the disease, in the hands of Bruineman and Courcells; and the acetic acid, in the hands of Klaatsch and Reimann. To obtain from the acids any beneficial effects, their application should be repeated every half hour, or, at furthest, every hour. They may be applied either by a pencil, or by covering the affected parts with lint moistened with them, and continued until the gangrene ceases to spread, and granulations are formed. When thick firm sloughs occur, these should be freely searified previously to the appli-

cation of whatever wash is used.

The actual cautery is recommended by Baron, and the chloride of lime or soda, and the tincture of iodine (Davies) by others. Cases illustrative of the good effects of the actual cautery, have recently been published by Henry Obrée, Esq.

When sloughs have formed upon the checks, some advantage may be derived from poultices, containing the chlorides of lime or soda, or the pyroligneous acid. The early extraction of the loosened teeth

is of importance, and should never be neglected.

The administration of internal remedies would appear to interfere, but little with the progress of the disease. The diet should be light and nutritious; it may consist of beef tea, plain beef or mutton broth with rice; milk with rice; tapioca, sago, and the like farinaceous articles. Wine whey may be occasionally given with advantage; and we can conceive of cases, in which a moderate use of sound wine may be necessary, in order to sustain the sinking powers of the little patient. Such cases, however, have never fallen under our notice.

From the administration of the sulphate of quinia in solution, or of

the cold infusion of cinchona, we have, in many instances, seen much good to result.^a

a R.—Quiniæ sulphat. gr. x.
Acid. sulph. dil. M x.
Sach. alb. Jiv.
Aq. cinnamon, Jiv.—M.
Dose, a tea spoonful, every three hours.

Or R.—Quiniæ salphat. gr. viij.
Aq. chlorin. Jj vcl.
Acid. salph. dtl. M v.
Syrup. hmon. J iv.—M. (Dunglison.)

The chlorine water and the chloride of lime, or the chloride of soda are said to prove advantageous internally administered.

* R.—Caleis chlorin, gr. x vel, Liq. Sodæ chlorin. M viij. Syrup, Zij. Aquæ, Ziv.—M. (Dunglison.) Dose, a dessert spoonful every three hours, for a child, six years old.

The free, internal use of the chlorate of potassa—one to three scruples, in twelve hours, according to the age of the child, has been strongly recommended recently. (Hunt.) In Brank wall.

The iodide of iron has also been suggested as a means of improving the condition of the nutritive function which, in this disease, is evidently impaired. (Dunglison.)^a

a R.—Vini Hispan. (sherry) Ziv. Ferri iodid. Zi.—M. Dose, a tea spoonful, four times a day.

When a profuse diarrhoea occurs in the course of the disease, we have found it often to be very quickly arrested, by adding to the solution of sulphate of quinia, two or three drachms of the tineture of kino. In some cases, we have given, with good effect, three or four grains of powdered galls, repeated every three or four hours; should these remedies fail, we may give the acetate of lead, in the following prescription.^a

a R.—Acetat. plumbi, gr. xvj. Cretæ ppt. Đijss. Ipecacuanhæ, gr. iv. Opii pulv. gr. ij.—M.
One to be given every three or four hours.

7.—Difficult Dentition-

Dentition, although a purely physiological process, and one, that in the healthy infant with an organism, in no part of which there exists any strong predisposition to morbid action, is attended, in general, with little suffering or danger, may, nevertheless, give rise to much suffering, or even be the exciting cause of some violent and quickly fatal malady, whenever the irritability of the infant's system has become unduly augmented—when its energies have been impaired, and a tendency to disease in the alimentary canal, in the brain or in the respiratory organs, has been developed by bad nursing—or by an impure, heated, or confined air.

It is usually between the fifth and seventh month, that dentition, in the ordinary acceptation of the term, commences; in different cases, however, the period, when the teeth begin to protrude from the gums, will be found to vary—in some, the teeth appearing earlier, and in others, not until some weeks, or even months, later.

As soon as dentition commences, there is very generally an increased redness, attended with considerable heat and tenderness of the gums, and an increased secretion of saliva. Occasionally, there is a slight febrile reaction—redness of the cheeks, watering of the eyes, and

augmented thirst.

The child is often fretful, and disturbed in its sleep. The discharges from the bowels are more frequent and fluid than usual, and occasionally of a greenish hue; and the stomach is morbidly irritable, the matters discharged from it, having often a strong acid smell. Occasionally, eruptions appear upon the skin, particularly upon the forehead and cheeks—an erythematic inflammation and ulceration behind the ears, and not unfrequently a slight tumefaction of the salivary glands.

As the advancing tooth approaches the surface of the gum, the fingers of the child are frequently held in his mouth; he presses firmly between his gums the nipple in sucking, or any object which he can readily seize and convey to his mouth; this appears to ease some uneasy sensation experienced by the child, as does also, pressing or

rubbing the gum with a finger.

The foregoing symptoms are not invariably present during dentition. In some children, the process is attended with such slight inconvenience, that the first two incisors are frequently cut without attracting the slightest attention, until their points are seen protruding beyond the gums. It is principally, when there is a disproportion between the development of the teeth and jaw, as when dentition commences very early, or when a number of teeth are cut at the same time, that dentition is attended with much pain or difficulty. The molar teeth are, also, cut with more difficulty than the incisors. Even, however, when the symptoms we have described do occur, all that is necessary, is, to confine the child to the breast of a healthy nurse, and to supply him occasionally, with moderate portions of fresh water in which a small quantity of gum accaciæ has been dissolved; or if he has been weaned, to confine him to a diet composed chiefly of milk and farinaceous substances, and for his drink, to toast, barley, or rice water; animal food, all stimulating drinks, and every kind of spice should be withheld. He should be kept in a pure, fresh air, and not overheated either by too much clothing, or by too great a temperature of the room he occupies. His head, in particular, should be kept cool, as well during the night, as in the day. The daily use of the tepid or warm bath will be advantageous; and if the weather permit, daily exercise in the open air should not be neglected.

Little attention need be paid to the diarrhœa that is usually attendant upon dentition—it is seldom very profuse. If attended with considerable griping, an injection of thin starch, or of a decoction of flaxseed, with the addition of a little sweet oil, will, in general, be sufficient; if the griping still continue, a few grains of calomel may be given by the mouth, followed, in the course of four or five hours,

by a dessert spoonful of castor oil. If, as occasionally happens, the bowels, in place of being more free than usual, are constipated, a dose of magnesia, or of castor oil may be given. The eruptions, which occasionally appear about the face, and the inflammation and ulceration behind the ears, demand no particular attention; the latter may be washed, night and morning, with some mild mucilaginous fluid, as water in which the pith of sassafras or the inner bark of the slippery elm has been infused. The eruptions and ulceration very commonly disappear, when the teeth have protruded beyond the gums.

As children appear to derive relief from a slight degree of pressure upon the gums during dentition, something should be allowed them for this purpose. A substance, that will yield to the pressure of the gums, is to be preferred; an oblong piece of gum catchouc, two or three inches in length, and half an inch in breadth, will probably be the best; it should be suspended round the neck by a ribbon or tape. All hard, rough, or unyielding substances are positively injurious.

A variety of washes for the mouth have been recommended, by different writers, to "soften, soothe, and refresh the gums, during dentition." When composed of any simple mucilage, these washes will do no harm; they are unnecessary, however, if the child be supplied with cool mucilaginous drinks; the good effects that have been attributed to them, in allaying the irritation of the gums, is referable, we suspect, entirely to the gentle friction of the gums produced by the

nurse's fingers, in their application.

It is not always, however, that the process of dentition is accomplished with so little inconvenience. In children of very irritable habits, in those who are gross and plethoric, or in whom there exists a strong tendency to disease in one or other of the organs, dentition may become the exciting cause of some of the most serious and fatal maladics, incident to the period of childhood. Inflammation of the mouth or gums, terminating in ulceration or gangrene-long continued and extensive disease of the bowels, accompanied with frequent and vitiated discharges—spasmodic closure of the glottis—convulsions, often of a violent character-hyperæmia, inflammation, or dropsy of the brain, are among the most common results of difficult dentition in children predisposed to diseasc. In the children of the poor, especially, who are exposed to the overheated, stagnant, and impure atmosphere of the confined streets, courts, and alleys of many of our larger cities, dentition becomes, during the summer season, one of the most common exciting causes of the cholera of infants.

Even, in such cases, much may be done, by a judicious course of treatment, towards preventing the mischief which the process of dentition has a tendency to develope. The child should, as far as possible, be removed from the influence of whatever morbific causes he may be surrounded with. He should be placed in a pure, fresh atmosphere. His diet should be mild, nourishing, and easy of digestion; it of a plethoric habit, every species of animal food should be withheld from him; while, if he be labouring under great exhaustion or debility, it may be necessary to allow him beef, mutton, or chicken broths, or

even a portion of the meat of which these are prepared, plainly cooked, and in moderate quantities. The strictest cleanliness of person and clothing should be observed:—the daily use of the warm bath, and frequent_exposure to the open air, in suitable weather, with an amount of exercise adapted to his age and state of health, should be

strictly enjoined.

The state of the gums should be daily and carefully examined; and the moment they appear hard and swollen, and the teeth are evidently producing a distension of them at the points where they are about to protrude, a free incision should be made with a lancet, so as completely to divide the tough membrane by which the tooth is enveloped, the tension of which, by the advancing tooth, being the cause of much of the pain and irritation consequent upon difficult dentition. The lancet should, in every instance, be carried down until it reaches the tooth, and if it be a molar tooth that is about to protrude, a crucial incision will be necessary. This operation gives but little pain, and is rarely, when judiciously employed, attended with danger or inconvenience,* while, in many cases, it is followed by immediate relief, and may be the means of preventing the occurrence of fever, convulsions, or fatal disease of the brain. Even, subsequent to the occurrence of convulsions, of spasmodic closure of the glottis, or deep stupor from hyperæmia of the brain, a free division of the gum over the advancing teeth has been known, in repeated instances, to be followed by an almost immediate cessation of every alarming symptom.

A curious case is related, by M. Robert, in his Treatise on the principal objects of Medicine, illustrative, as well of one of the effects of difficult dentition, as of the division of the gum. We give it upon the authority of M. Carault, not having seen the work of M. Robert.

A child, after having suffered greatly from difficult dentition, apparently died, and was laid out for interment. M. Lemonnier, having some business at the house of the nurse, with whom the child resided, after fulfilling the object of his visit, was desirous of ascertaining the condition of the alveoli in this case. He accordingly made a free incision through the gums; but, on preparing to pursue further his examination, he perceived the child to open its eyes, and give other indications of life. He immediately called for assistance; the shroud was removed from the body, and, by careful and persevering attention, the child's life was saved; the teeth made their appearance, and its health was fully restored.

When considerable redness and tenderness of the gums occur

^{*} We have said that the division of the gum over the protruding teeth, when performed at a proper time, and in a proper manner, is "rarely attended with danger or inconvenience." It should be performed only, when the gnm is evidently raised by the advancing teeth, and the surrounding parts are red and painful. We have never seen the apth us or gangrenous ulceration which, Billard apprehends, may be produced by the incision. Were it to occur, in the majority of cases, it would be a less troublesome and unmanageable occurrence, than that, to prevent which the incision is made. In two instances, however, both occurring in children of a scrophulous habit, and who had suffered from long continued chronic disease of the bowels, a constant owing of blood took place from the incision, and which could not be arrested by any means that were resorted to, including the actual cautery.

about the period when the process of dentition is expected to commence, without, however, either of the teeth having advanced sufficiently near to the surface of the gum, to render an incision of the latter necessary; emollient washes should be frequently applied to the gums, and a leech or two to the angles of the jaw. If the bowels are costive, a calomel purgative, followed by castor oil, may be administered.

If a considerable degree of febrile excitement be present—particularly, if it be attended by heat and tenderness of the abdomen—a few leeches to the gums, and over the epigastrium, the tepid bath and small doses of calomel and ipecacuanha, will generally be found advantageous.

^a R.—Calomel. gr. ij. ad iij. Magnes. calc. gr. xxiv. Ipecacuanhæ pulv. gr. ij. ad iij.—M. f. ch. No. xij. One to be given every three hours.

When dentition is attended with frequent and copious discharges from the bowels, of a thin watery consistency, and accompanied with more or less griping—bland mucilaginous drinks and the tepid bath, will, in general, afford relief; if, however, the diarrhæa continues unabated or increases, we have found the best means of arresting it to be a solution of acetate of lead given by the mouth.^a

a R.—Acetat. plumbi, gr. viij.
Acid. acet. impur. M viij.
Saceh. alb. Gj.
Aq. puræ, Ki.—M.

Aq. puræ, 3i.-M.

An ordinary sized tea spoonful of which may be given as a dose; and repeated, three or four times a day, until the frequency of the discharges are abated.

When there exist increased heat and redness, with turgescence of the vessels about the head—particularly if, at the same time, the child is unusually drowsy, or starts frequently from its sleep with a wild, affrighted aspect—a few leeches should be applied behind the ears and the head sponged frequently, with cold water alone, or cold water, with the addition of one-fourth of proof spirit; the bowels should also be freely opened by calomel, followed by castor oil or epsom salts. Where the tendency to disease of the brain is very decided, after the leeches are applied, blisters behind the ears, repeated as they heal up, will often prove serviceable.

The slightest indication of an approaching attack of convulsions or spasm, should be carefully watched, and treated by its appropriate

remedies.

The dysuria, so common in cases of difficult dentition, is best assuaged, by the free exhibition of some mild, demulcient drink. If the pain be considerable, and there is nothing present to forbid its use, an opiate may be administered.^a

* R—Sulph, magnes, Jij. ad Jiij. Solve in Aquæ puræ Jj. dein adde Spir. æther, nitrici, Jij.
Tinc, opii M vii. ad xv.
Dosc—a tea-spoonful to be repeated, according to circumstances.

Or, R—Hydrochlor. ammoniæ 3j.
Pulv. ipecacuanhæ, gr. iv.
Pulv. opii gr. ij. M. f. ch. Nc. xv.
One to be given once or twice in the
course of the day, according to circumstances.

8.—Tongue Tie.

Physicians are frequently ealled upon, to relieve, by an incision, the tied tongue of infants; an accident supposed to be produced by a malformation of the frænum linguæ. It often happens, that in young infants, the frænum approaches very near to the apex of the tongue; and it is possible that, in some instances, the impediment to the free motion of the tongue, thence resulting, may render sueking very difficult, or even impossible. We confess that we have never met with such a case; though, if nurses are to be believed, it is a thing of the most common occurrence. Infants occasionally appear to suck with difficulty, frequently letting go and reseizing the nipple; in other cases, the act of sucking is accompanied with a kind of clucking sound: - this is almost invariably attributed to the tongue being tied. We have, however, repeatedly examined the tongue in such eases, and have detected no malformation of it, or of its frænum:—nothing, in fact, to interfere with its movements. Burns declares that he has not seen two children, where a malformation of the frænum, rendered any operation really necessary. Marley has seen but one; the operation Underwood declares to be very rarely necessary; and the same observation is repeated by Maunsel. The tongue is sufficiently free for all its functions, if the tip can be advanced beyond the outer margin of the lip, or placed upon the roof of the mouth. An operation is requisite only, in cases where the confinement is such, as to prevent either of these movements. (Blundell.)

When an operation is absolutely necessary, it consists in dividing, with a knife or scissors, the anterior edge of the frænum; taking care that the incision be not carried too far, so as to endanger a division of the lingual vessels, and give rise to a troublesome and dangerous

hæmorrhage.

The head of the child should be held firmly, with the face upwards. The operator standing behind the top of the head, inserts the first and second fingers of the left hand into the mouth, beneath the tongue, and places one on each side of the franum, when the latter may be

cautiously divided, to the extent deemed necessary.

Of the accidents that have been said to result, in some cases, from this operation, we need not speak:—by proper caution and skill, on the part of the operator, they can, in every instance, be very readily avoided.

CHAPTER II.

DISEASES OF THE THROAT.

1.—Tonsillitis.

INFLAMMATION of the tonsils and veil of the palate, is a frequent disease, in the latter stage of infancy, and during the entire period of childhood. It seldom, however, assumes the decidedly acute character, so common in the tonsillitis of adults. From a very early age, the tonsils are liable to a sub-acute form of inflammation, producing, in many cases, a very considerable enlargement of these parts, which often continues for a long period, changing the tone of the patient's

voice, and impeding his breathing and deglutition.

Tonsillitis usually commences, with a sense of pain or uneasiness in the throat, a huskiness of the voice, a sense of chilliness and langour, quickly followed by more or less febrile reaction. The pain in the throat increases, deglutition becomes more difficult, and a sense of heat or burning is often complained of in the pharynx. There is often considerable nausea, and in children at the breast, regurgitation of the milk, shortly after it is swallowed; in children a few years old, there is a frequent hawking and rejection of tough mucus. throat being examined, the volum palati and pharynx, are found to be increased in redness, and tumid; both the redness and intumescence, being often more considerable on one side than on the other; one or both tonsils are swollen, and generally covered with a coat of thick, tough mucus, often of a dirty white colour. In some cases, the soft palate and uvula, present a dark red and ædematous appearance. The throat is tumid, and painful to the touch, externally. The tongne is covered with a white fur, through which the papillæ of the tongue, enlarged, and of a bright red liue, project—a thick pellicle of transparent mucus, being spread over the whole; when complicated, as it is occasionally, with gastric disease, the tongue is generally eovered with a yellowish fur, and a sense of pain or heaviness is experienced over the eyes.

The swelling of the tonsils is often very considerable, impeding respiration, often entirely preventing deglutition, and rendering the voice indistinct and whispering. The disease, when properly treated, commonly terminates by resolution. We never recollect to have seen an instance of extensive suppuration in a child. A substance, somewhat resembling pus, is, however, occasionally seen, adhering to the surface of both tonsils; and, occasionally, a slight, eircumscribed diptheretic exudation. Very frequently, the redness and tumefaction of the velum and pharynx subside, while the enlargement of the

tonsils continue.

More frequently, the symptoms, from the commencement of the attack, are of a much less marked character. The child, if at the

breast, exhibits difficulty and pain in swallowing, and throws up its milk soon after it is swallowed; the throat, externally, is somewhat swollen, and tender to the touch; and there is a peculiar huskiness of the cry. If the child is old enough, it complains of pain in the throat, increased at every attempt to swallow; and the swelling of the throat externally, is often very considerable; there is difficulty of breathing, and a frequent hawking up, of a thick, tenaceous mucus. On examining the throat, a slightly increased redness of the palate is observed, with considerable and irregular enlargement of the tonsils, which present a kind of lobulated appearance, their surface being covered with a thick coating of tough mucus.

This latter form of the disease, is very generally complicated with disease of the alimentary canal; and is more common in children of a lymphatic, than in those of a sanguineous temperament and pleth-

oric habit.

The causes of tonsillitis are, in general, exposure to cold and dampness—sudden vicissitudes of atmospherical temperature—cold drinks, when the body is in a state of perspiration—and cold to the feet. It frequently exists simultaneously with acute exanthemata. It is more prevalent in spring and the latter part of autumn, than in the middle

of either summer or winter.

The treatment of inflammation of the tonsils is very simple, and, if early commenced, a very prompt resolution of the inflammation may in general be effected. In slight cases, some rubefacient to the throat, externally, followed by an emollient poultice; a purgative of a few grains of calomel, with a moderate dose of the sulphate of soda a few hours subsequently, and a warm pediluvium at bed-time, will frequently be sufficient to arrest the inflammation.

a R.—Ol. olivæ, Zj.
Aq. ammoniæ, Zij.
Sp. terebenth. Zj.—M.

When, however, the inflammation of the throat is more considerable, a few leeches should be applied to the neck, or behind the ears; and, internally, minute doses of tartar emetic, either simply dissolved in water, or in a solution of sulphate of magnesia.

^a Aquæ puræ, ¿¡ij. ad iv. Tart. antimon. gr. j.—M. Dose, a tea-spoonful every two or three hours. b Sulph. magnes. Ziv. solve in Aq. puræ, Ziv. dien adde Tart. antimon. gr. j.— M. Dose, the same. j

We have derived very great advantage, in cases of tonsillitis, from the use of a combination of the hydrochloride of ammonia, ipecacuanha and calomel.²

> Ammoniæ hydrochlor, gr. xxxvj. ad 3j. Ipecacuanhæ pulv. gr. ij.—iv. Calomel, gr. iij.—vj.—M. f. chart. No. xij. One of which is to be given every three hours.

The hydrochloride of ammonia, in inflammations of the throat in children, is a favourite prescription with many of the continental

physicians. Loeffler recommends it in tonsillitis, dissolved in water,

with the addition of the extract of liquorice.

Blisters to the throat, are directed by most writers, when the inflammation of the tonsils is severe, and is not quickly arrested by the other remedies employed. We have seldom seen much good result from the application of blisters to the throat in children; nor any instance in which they were required, in the disease under consideration. If resorted to, they should be kept on only so long as to redden the skin; and, on their removal, the part to which they were applied should be covered with an emollient poultice.

If the child be at the breast, it is better not to allow it to suck, until the inflammation of the throat is subdued—it sucks in general with so much avidity, that a large quantity of milk is carried to the throat at one time, which is almost immediately afterwards discharged by regurgitation or vomiting. Its thirst may be assuaged by a few spoonfuls of water, rendered somewhat mucilaginous, by an infusion of slippery elm bark, or pith of sassafras, or by a mixture of milk and

water, given occasionally.

Older children should be debarred from all food, and allowed toast-

water, or some simple mucilaginous fluid as a drink.

Patients affected with tonsillitis, should be kept in a dry apartment, the air of which should be of a moderate and equable temperature.

When accompanied by disease of the alimentary canal, the latter

should be treated by its appropriate remedies.

The treatment of the sub-acute form of tonsillitis, which, according to our experience, is the one most frequently met with in children, differs in nothing from that of the acute form. Leeches to the throat, will be occasionally required. The mixture of hydrochloride of ammonia, ipecacuanha and calomel, will be found particularly

advantageous in the sub-acute form.

When an indolent enlargement of the tonsils remains, after the removal of the inflammation, the application of solid nitrate of silver over the surface of the enlargement, will occasionally be found serviceable. We have seldom, however, seen much injury, or very serious inconvenience, to result from enlarged tonsils in children; they have usually gradually dispersed, and have seldom continued beyond the period of puberty.

2.—Pseudo-membranous, or Diptheritie Inflammation of the Throat.

This is one of the most common forms of inflammation of the throat in children, and is that which most generally accompanies scarlatina, when the latter prevails as an epidemic. Its most conspicuous character, is the early exerction of a thin, pseudo-membranous pellicle, either continuous or in patches, and closely adherent to the surface of the inflamed mucous membrane, upon which it is produced.

Pseudo-membranous inflammation of the throat, commences often

with symptoms of so mild a character, as to attract scarcely any attention, until the local disease has made considerable progress. The deglutition is but little—or not at all—impeded; only a trifling sorcness, or rather a sense of roughness in the fauces is experienced, while no febrile excitement is present. The child often continues to indulge in its ordinary sports, with, perhaps, a little more fretfulness and dejection than usual, and, becoming, apparently, more quickly tired. In other cases, however, there is, from the commencement, a sense of langour and general discomfort; a sense of chilliness, alternating with flushes of heat; increased thirst; pain of the head; a sense of heat or burning in the throat; while the act of swallowing, and the slightest motion of the neck, cause intense pain. The skin is hot and dry; the eyes are often red and watery; and the countenance flushed. Frequently, however, the countenance is tumid, pale, and expressive of sadness or dejection. When the febrile excitement is considerable, there is generally an exacerbation, night and morning. There is, in many cases, considerable nausea, and tenderness of the epigastrium. At first, there is usually a constipated state of the bowels:—diarrhæa, however, commonly supervenes, in the course of the disease, and is often copious, particularly in severe and protracted cases.

From the very commencement of the attack, the nucous membrane of the fauces and tonsils, will be found to be of a deep red colour, and covered with a layer of tenaceous transparent mucus. The mucous membrane, particularly of the pharynx and soft palate, is often infiltrated with blood, in the form of small disseminated points, having a linear arrangement; or of small, oblong ecchymoses, of a dark red colour. Occasionally, the mucous membrane presents a few dry, oblong, greyish spots, as though it had been, at these points, cauterized with an acid.

As the disease advances, the exudation becomes more abundant. and forms a firm pellicle, of a dirty yellow, or greyish colour. It is usually disposed, at first, in patches, more or less circumscribed, often slightly elevated in the centre, but thin and flocculent at the circumference. The patches increase in extent, more or less rapidly. Sometimes, in the course of a few hours, the whole of the posterior fauces becomes covered with them. They are at first thin, but become increased in thickness, by successive depositions, and acquire often so much firmness, as to permit them to be detached entire, from the mucous membrane, to which they adhere, by numerous minute filaaments, that appear to penetrate the orifices of the mucous follicles. Their detachment is generally followed by more or less oozing of blood, from the denuded membrane, which exhibits but little intumescence, and is of a dark red colour, often variegated with points or striæ, of a deeper hue. Between the pseudo-membranous patches, the sub-mucous cellular tissue, assumes, occasionally, an ædematous appearance; in consequence of which, the corresponding portion of the membrane is elevated, and causes the portions that are occupied by

the pseudo-membrane, to assume somewhat the appearance of ulcers, covered with a tenaceous exudation. The patches, very generally, become soon confluent; so that, in many cases, the whole of the soft palate, the pharynx and inner surface of the cheeks, are lined by a continuous pseudo-membranous exudation, often of considerable consistence, which is rapidly renewed, as often as it is detached.

In the commencement, the tongue is pointed, red at the edges, and covered on its surface with a thin layer of white mucus, through which the enlarged and florid papillæ protrude. There is an increased secretion of saliva, which soon becomes dark coloured, from the admixture of blood, discharged from the mucous membrane, as portions of the pseudo-membranous deposit are detached, and of an offensive odour, from the vitiated state of the secretions of the throat and mouth.

In the course of the disease, the colour of the pseudo-membranous excretion changes to an ash, brown, and, finally, black colour; the mucous membrane beneath, becoming of a dusky red hue; the tongue and mouth are often dry, and dark coloured, and the teeth more or less

thickly covered with a dirty white, or blackish incrustation.

If the disease of the throat is of any extent, and the inflammation is not early arrested, the glands become enlarged and painful, and the surrounding cellular tissue infiltrated with serum; more or less tume-faction of the tonsils and soft palate, and occasionally of the tongue, takes place; often to such an extent, as to interfere with the freedom of respiration; ulcers form along the edges of the tongue, the palate, and inner surface of the cheeks. There is a constant oozing of blood from the mucous membrane of the mouth and fauces, which is increased upon the slightest irritation.

The febrile excitement usually continues, with but little abatement, until towards the close of the disease; the heat of the surface, however, in general abates—the skin assuming a dusky appearance and doughy feel; profuse diarrhæa often occurs; the secretions, generally, become vitiated, and either increased or diminished in quantity; the prostration of strength augments; and a state of torpor, or even

decided coma, is not unfrequent.

When the inflammation and pseudo-membranous deposit extend into the pharyux and commencement of the esophagus, there is a sense of soreness and of heat in these parts, accompanied with increased difficulty of swallowing—every attempt at which is productive

of severe pain.

When the disease extends through the posterior nares to the mucous membrane of the nose, the patient is unable to respire through the nostrils; from these there takes place a discharge of a serous, yellowish and flocculent, or bloody sanies, often of a very fætid odour, and which produces more or less inflammation and exceriation of the external openings. When the disease extends to the Eustachian tube, pain is experienced in the ear, with more or less defect of

hearing, often complete deafness, which, in consequence of the oblit-

eration of the tube, is, occasionally, permanent.

The pseudo-membranous inflammation is particularly liable to extend into the larynx, trachea, and bronchii. This extension of the disease, in some cases, takes place almost instantaneously, on the first appearance of the patches in the fauces; in other instances, the respiratory organs are not affected until about the second or third day, or even later. At whatever period the respiratory tube becomes affected, the more prominent symptoms of croup-hoarseness, shrill cough, great difficulty of respiration, and more or less aphonia, are immediately developed, and, in the greater number of cases, the patient is rapidly destroyed. It is supposed by some, that cropp is, in every instance, produced by an extension of the pseudo-membranous inflammation, from the throat to the larynx, and trachea; (Brettoneau;) although we cannot admit that such is invariably the case, we have reason to believe, that the secondary croup, from pseudo-membranous inflammation of the throat, is more frequent than is generally supposed.

Besides the extension of pseudo-membranous inflammation to the larynx and trachea, giving rise to the phenomena of croup, it is said to be productive, also, in certain cases, of a species of pneumonia, extremely insidious in its commencement, and marked, in part, by the symptoms which are referable to the disease of the throat. The cough, in this affection, is different from that of croup, and is unattended with aphonia; the mucous expectoration is often streaked with blood, while auscultation and percussion give all the indications of a more or less extensive catarihal engorgement of the lungs.

(Guersent.)

There is not only a tendency in the pseudo-membranous inflammation to extend along the mucous membrane of the throat, into the cavities of the nose, even to the frontal sinuses, (Guersent,) into the Eustachian tube, the pharynx, esophagus, larynx, trachea, and bronchii, but it, likewise, often seizes upon remote parts of the body, particularly in situations covered by a mucous membrane, or from which the cuticle has been accidentally removed by a blister, or ulceration, (Trousseau) Thus it is often observed upon the lips, the alænasi, the concha, external meatus and parts behind the ear, the nipples, folds of the groin, the contour of the anus, the vulva, the surface of blisters, leech bites, &c.

In favourable cases of pseudo-membranous inflammation of the throat, as the membranous exudation becomes detached from the mucous membrane, its place is quickly supplied by a new formation, and, after each separation, it becomes, in general, whiter, and much thinner. This separation and renewal of the pseudo-membranous deposit, continue, in most cases, for the space of eight or ten days; when, finally, it ceases to appear, leaving the mucous tissue to which it had been attached, perfectly sound throughout its whole extent; of a light red, uniform colour, and covered, usually,

with a thick yellow mucus, more or less resembling pus. In other cases, the exudation, instead of being separated in fragments, becomes, in part, softened to a pulpy consistence, and is discharged from the mouth, mixed with bloody mucus. As the disease in the throat disappears, the glands of the neck, provided they are not in a state of suppuration, diminish in volume, and are no longer painful or tender to the touch. The difficulty of deglutition disappears; the tongue loses its pointed appearance, and becomes clean and moist, the skin soft, moist, and of a more natural appearance, the countenance more animated and cheerful; while the stomach and bowels gradually resume the regular performance of their natural functions, and the general strength and vigour of the patient are slowly reinstated.

In severe and unfavourable cases, the disease is often more prolonged; the whole of the symptoms become aggravated; the mouth, tongue, and throat become dry, and of a deep black colour; the diarrhæa becomes profuse, and the strength of the patient more and more exhausted; general colloquation ensues, and death takes place, frequently preceded by deep coma, or, in children somewhat advanced in age, by violent delirium.

When the disease is confined to the soft palate, isthmus of the fauces, and pharynx, it is seldom attended with much danger, yielding readily to an appropriate treatment; or, when the inflammation is of little extent, disappearing spontaneously in a few days. When,

ing readily to an appropriate treatment; or, when the inflammation is of little extent, disappearing spontaneously in a few days. When, however, the disease extends to the larynx, it is, very frequently, fatal, by the occurrence of tracheitis, bronchitis, or pneumonia.

The causes pature and treatment of pseudo-membraneous inflamma-

The causes, nature and treatment of pseudo-membranous inflammation will be noticed, after we have described the gangrene of the throat.

3.—Gangrene of the Throat.

Actual gangrene of the throat is of far less frequent occurrence than it was generally supposed to be by the older writers, or is still believed to be by many physicians of the present day. That form of anginose disease to which the term putrid, malignant, or gangrenous, has been most commonly applied, is, strictly speaking, unattended with either gangrene or sloughing of the throat; it is, in fact, a highly aggravated, or malignant form of pseudo-membranous inflammation. Sloughing of the throat, or a species of gangrenous ulceration of this part, may, however, occur in certain cases of epidemic angina, and particularly in the angina accompanying certain epidemics of scarlatina, of a very malignant character. Even in these cases, however, it is probable that the disease invariably commences with pseudo-membranous inflammation of the throat.

Malignant angina in its commencement, differs but little from ordinary pseudo-membranous inflammation of the throat. The fauces present the same membraniform exudation; it is more generally confined, however, to the mucous membrane anterior to the

larynx, over which it is more uniformly spread. It also more early assumes a dull ash colour, quickly changing to dark brown or black. The disease seldom, if ever, extends to the trachea or bronchii. The pain and tumefaction of the sub-maxillary glands, are much more considerable than in the preceding form of the disease; and they are, also, more liable to run into suppuration. The face exhibits a bloated, bronzed aspect; the eyes are heavy, dull, and watery. The mucous membrane of the fauces is, almost uniformly injected with blood, of a violet colour, and more or less swollen, but without the ecchymosed appearance, noticed in the preceding variety; the tonsils, also, are more swollen, softer, and infiltrated with mucus and pus. (Guersent.)

There is often extreme difficulty of deglutition; the voice is entirely guttural, and the power of articulation is, occasionally, suspended. In some instances, the respiration is rendered difficult, from

the excessive tumefaction of the tonsils, and soft palate.

In the commencement of the attack, there is, generally, intense febrile excitement, with a dry, hot, burning skin, parched month, urgent thirst, and often considerable delirium. The fever is attended with exacerbations, towards evening. Nausea, vomiting, with tenderness and oppression at the epigastrium, and diarrhæa, attended with thin, acrid, and intolerably offensive discharges, are often present from the commencement of the attack; or occur at an early period.

A fætid, sanious discharge from the nostrils, occurs often from the very commencement, and the patient discharges from the throat, at first a thin, bloody mucus, which becomes, subsequently, puriform, and mixed with shreds of a membranous appearance. In some cases, the discharge is dark coloured, almost putrid, and highly offensive.

When the disease is of a favourable character, upon the separation of the pseudo-membranous exudation, the mucous surface beneath presents a moist, red appearance, without ulceration or loss of substance; the discharges from the mouth become of a less offensive character, and are diminished in quantity; the tumefaction of the throat subsides; the tongue becomes cleaner and more moist; the febrile symptoms gradually abate, or disappear; the dejections from the bowels diminish in frequency, and become more natural in appearance; a general amelioration of all the other symptoms ensues, and the patient, by slow degrees, acquires his accustomed strength and vigour.

In cases of greater malignancy, the symptoms rapidly increase in intensity; the pseudo-membranous deposits in the throat assume a dark colour, and separate in flocculi, or shreds, of an intolerable fœtid odour. The mucous membrane, at first, presents a dark red, and raw appearance, while from its surface there oozes a dark coloured blood; but speedily assumes a sloughy condition; the tongue becomes dry and parched, and coated with a dark brown or black crust; the teeth and gums are covered with dark coloured sordes; and the gangrenous condition extends from the mucous membrane to the tonsils and soft palate. The accompanying fever assumes a low, typhoid character, and

petechiæ of the external surface, are often observed. Dark coloured vesicles occasionally occur about the corners of the mouth, and on the inner surface of the lips and cheeks, and occasionally upon the tongue, and becoming ruptured, form gangrenous ulcers, that quickly extend, and cause extensive destruction of the surrounding soft parts. The diarrhea increases in frequency; the discharges become more thin, acrid, and offensive; the strength of the patient more and more prostrated; and stupor and insensibility ensue, which

are quickly succeeded by death.

The progress of gangrenous angina is ordinarily very rapid, the discase often running through all its periods in the space of a week or twelve days. It generally attains its height in seven or eight days, when the febrile symptoms abate or disappear. It may destroy life in a very short period, but occasionally runs a protracted course of several weeks. When it terminates fatally, death usually takes place within the first week, either from extreme exhaustion of the vital powers, or in consequence of the occurrence of extensive lesions of the digestive, or other organs. When the disease occurs epidemically, it is often productive of a very great mortality; under all circumstances, it is a dangerous disease, and one but little within the control of medicine.

No little difference of opinion prevails, as to the pathological character of pseudo-membranous angina. Bretonneau, Guersent, and many other of the continental writers, denominate it a specific inflammation; which, in fact, amounts to little more than a confession of their ignorance of its true character. Broussais maintains, that the disease is in fact a gastro-enteritis; the affection of the throat being secondary to the inflammation of the digestive organs. Emangard, also, adopts this opinion. There can be no doubt, that, in numerous instances, the affection of the throat is preceded or accompanied by symptoms of more or less severe gastro-enteric disease; but it has been known to occur as frequently without any such symptoms being present—at least in its early stages. Jolly refers the disease to a hæmorrhagic inflammation, in which the colourless fibrin is exuded upon the surface of the mucous membrane; and Naumann with a few other German pathologists, suppose it to result from a separation and exudation of the albuminous portion of the blood, in consequence of a change in the condition of the latter, produced by an epidemic influence. Collincau regards the disease as one dependent upon a general, and not upon a merely local affection; while according to the views of Andral, the disease consists in an acute hyperæmia, of the mucous membrane of the fauces, with exudation of coagulable lymph. That pseudo-membranous angina consists in an intense erythema of the mucous membrane, giving rise to an albuminous exuda-tion, there can be little doubt. This exudation is a common occurrence in the inflammations of the mucous tissue in children; and appears to be connected with a peculiar organization of this tissue, and certain states of the blood which then exist, difficult to be understood. Its gangrenous form is doubtless the result of a defective organic power, and consequent impairment of the nutritive function.

The causes of the disease have not been well made out: it is met with at all seasons, and in every variety of climate, and locality. It may occur either sporadically, or as an epidemic. It is, however, most prevalent during cold, wet, and damp seasons, and in low, damp and marshy situations, especially during the spring and autumn. It is of most common occurrence, also, among the children of those classes by whom personal and domestic cleanliness is neglected, and who, from poverty or other causes, are deprived of a sufficient amount of wholesome nutriment. The disease is liable to occur endemically, in situations where a number of children are crowded together, and a due attention is not paid to preserve the air pure, and freely ventilated. It is a common accompaniment of the epidemic scarlatina.

By nearly all the earlier writers, as well as by some of the more recent, the disease, especially its gangrenous form, is considered to be due to a specific contagion; or to be capable of being propogated by a contagious miasm, generated in situations where many persons are crowded together, without a proper attention being paid to cleanliness and free ventilation. (Bretonneau, Trousseau, Guersent, Velpeau, Bourgeois.) In looking over the arguments by which this opinion is attempted to be established, we find them, however, altogether inconclusive. They are derived entirely from certain endemic or epidemic occurrences of the disease, and instead of proving its propogation from one or more foci of contagion, they merely show that a number of individuals had been exposed to the same local or general morbific cause; and that, while many were affected by it simultaneously, in some it produced the disease at an earlier, in others at an later period. That the disease has occurred sporadically, affecting only one member of a family, or a single individual of a community, is admitted by nearly all writers; (Bourgeois;) but, that it has ever been communicated directly from the sick to the well, we have not the slightest evidence.

The treatment of pseudo-membranous inflammation of the throat, will, in a great measure, depend upon the character of each case. In mild, sporadic cases, the disease will generally yield to a very simple treatment; while, in its more aggravated forms, and especially when it prevails as an endemic or epidemic, the most energetic remedies will be demanded, from its very onset.

In every instance, in which there is no disease of the gastro-intestinal mucous membrane to counter-indicate its use, an emetic of ipecacuanha, administered in the commencement of the attack, will, in general, be found beneficial; and even at a later period, emetics will not unfrequently do good, by expelling the tenacious excretions accumulated upon the fauces, and thus rendering the respiration freer, and deglutition more easy.

Although the detraction of blood, either from the arm, or locally, by means of leeches, from the neighbourhood of the throat, is not so imperatively demanded in pseudo-membranous inflammation, as in

the other acute inflammatory affections of the throat in children; cases of the disease do, nevertheless, frequently occur, in which it is unquestionably called for, and will be productive of the best effects. In robust children, particularly in those of a sanguineous temperament, and plethoric habit, in whom the swelling and inflammation of the throat is considerable, and attended with symptoms of intense febrile excitement, general, as well as local bleeding, should be resorted to. (Gendron, Jolly.) Even in cases in which general bleeding may not be considered admissible, leeches to the throat, behind the ears, or to the angles of the jaws, will often be found advantageous. Broussais, Emmangard, and others, recommend in all cases, leeches to the epigastrium; and whenever there exists tenderness, with increased heat at this part, their application should not be neglected.

In cases attended with evident depression of the vital energies, with little febrile action, a cool skin, the fauces being of a dark colour, with considerable fætor of the breath, bleeding from the arm would be inadmissible, and even the application of leeches might then be

attended with danger.

There can be no doubt of the beneficial effects of calomel, in many cases of the disease; in the earlier stages, it forms our best purgative, and in those cases in which the larynx and trachea are implicated, it constitutes one of our most important remedies; it should be administered in large and repeated doses, either alone or combined with ipecacuanha³:—even in the ordinary forms of the disease, occurring in patients possessed of some degree of vigour of constitution, it has been found advantageous, relieving the throat of the membranous exudation, and other vitiated excretions, and producing a marked amelioration of the symptoms generally. (Bretonneau.)

^a R—Calomel, gr. xxxvj. ad xlviij.
Ipecacuanhæ, pulv. gr. iij. ad iv.
Magnes. calc. 3ss. M. f. ch. No. xij.
One to be repeated every three hours.

The employment of calomel, at first with emetics, and subsequently, by itself, in small, repeated doses, was a favourite practice with Dr.

Rush, in malignant angina.

In all cases the patient should be liberally supplied with diluent drinks. In the same class of cases in which active depletion has been recommended, these should consist of iced water, iced lemonade, or cold water slightly acidulated with vinegar; even portions of ice may be placed in the patient's mouth, and allowed, gradually to dissolve. In other cases, cool drinks may be allowed, but where the powers of the patient are depressed, and the skin cool, it is perhaps, better that the drinks be given of a tepid, or even warm temperature.

In cases attended with decided febrile reaction, the neutral or effer-

vescing mixture may be advantageously administered.

In the commencement of the attack, the tepid bath, with friction to the skin, will invariably be found productive of good effects; and when the heat of the surface is considerable, generally diffused,

and steadily maintained, the surface should be repeatedly sponged with cold water, or cold vinegar and water. In cases where the inflammation and swelling of the throat are considerable, warm pediluvia, with the addition of salt or mustard, will act beneficially, as a revulsant.

Where the powers of life are depressed, the pulse feeble, and the skin cool, the warm bath should be substituted for the sponging with

cold fluids, as recommended above.

Much difference of opinion exists, as to the propriety of blisters to the throat, in this disease. We confess that we are averse to blistering the throat in children; and in the few instances in which we have applied them, in pseudo-membranous angina, we have had reason to regret their use. In the early stage of the disease, the rubefacients recommended under the head of tonsillitis, followed by a warm, emollient cataplasm will occasionally be found useful. In cases of great violence, blisters may be applied to the back of the neck, with some active rubefacient to the throat.

The diet should be regulated, according to the leading symptoms of each case; where the attack is one which calls for active depletion, little else should be allowed than barley water, rice water, or water gruel. Rennet whey and buttermilk we have, occasionally, found to

be useful and refreshing articles of diet in this disease.

When the inflammation occurs in children of debilitated habits, or is attended with symptoms of exhaustion, beef tea, or plain mutton or

beef broth, in moderate quantities, may be allowed.

In the gangrenous form of the disease, with coldness of the skin, a feeble pulse, and other symptoms indicative of a depression of the vital energies, a discreet use of tonics and stimulants, will frequently arrest the progress of the gangrene, and produce a favourable change The cold infusion of cinchona, the in its leading symptoms. sulphate of quinia, the mineral acids, an infusion of serpentaria, or the acetate or carbonate of ammonia, or wine whey, may be administered, according to the circumstances of the case. acetate of ammonia, either alone, or combined with camphor; an infusion of serpentaria, or the cold infusion of cinchona, with some light aromatic, will be found among the most efficacious excitants and tonics in this disease. We have often combined with each dose of the bark, a portion of the hydrochloric or sulphuric acid, with decided advantage. The use of these remedies should, however, be invariably resorted to with the greatest caution, and their effects upon the symptoms of the case, carefully watched; if they produce dryness of the tongue, increased heat of the surface, inclination to stupor, or other unfavourable effects, their use should be discontinued. we are unable to administer tonics by the mouth, a decoction of bark, or of serpentaria may be given, in the form of enema, and in many cases will, in this manner, produce a very beneficial result.

When extensive tumefaction and tenderness of the glands of the neck occur, leeches may be applied upon the tumors, or they may

be kept constantly covered with cloths, wet with cold water, or cold vinegar and water. The effects of which are often peculiarly striking.

(Warren.)

Various local applications to the fauces, in the form of washes or gargles, have been proposed in the treatment of pseudo-membranous inflammation of the throat, and, by many, are considered to constitute the most efficient remedies for the disease. (Bretonneau.) In the early stage, equal parts of good vinegar and water, is, perhaps, one of the best gargles we can employ; diluted hydrochloric acid, or solutions of the chloride of soda or of lime, or a saturated solution of the bi-borate of soda, also, in many cases, form an excellent wash for the throat. (Guersent, Bourgeois, Roche.) A solution of the acetate of lead, may be employed for this purpose; it will be found, in general, in the commencement of the disease, very beneficial. A strong infusion of cinchona, or of oak bark, with the addition of alum; creasote diffused in water, or a saturated solution of the sulphate of copper, will also be found to constitute useful washes for the throat in this disease, particularly, when the occurrence of a gangrenous condition is apprehended.

The application to the fauces, two or three times a day, of hydrochloric acid, either pure, or combined with three parts of honey, has been highly extolled by many of the French and German physicians. (Bretonneau, Guersent, Trousseau, Bourgeois, Fischer, Muhll.)

Among the local applications, in favour of the beneficial effects of which we have the greatest amount of evidence, is the nitrate of silver, either in strong solution, or in its solid form. It is said, not only to cause the separation of the pseudo-membranous deposite, but also to produce a more healthy action, in the inflamed mucous membrane of the throat. It may be applied in the liquid form, by imbuing a portion of soft sponge, firmly attached to a whalebone, with the solution; great care being used to prevent any portion of it from entering the pharynx.—(Gendron, Guersent, Baudelocque, Authenac.)

*R.—Nitrat, argent, gr. xv. ad. xx. Aq. Puræ 3j. To be applied two or three times a day.

Alum, reduced to a very fine powder, and blown into the throat through a tube, the end introduced into the patient's mouth being defended by a piece of fine gauze, is strongly recommended in this disease, by many practitioners. (Bretonneau, Guersent, Bourgeois.) The sulphate of copper has been employed in the same manner. (Gmelin.) We have never administered these remedies in the manner here described, from the apprehension that a portion of the powder should pass into the larynx, and excite violent coughing. A much better mode of applying them is, in solution as a wash, or by forming them into a stiff paste, by the addition of honey and water, which may be smeared upon the diseased surface by means of a sponge, brush, or small spatula.

When the patient is unable to gargle, or when, from the extensive

swelling of the throat, or extreme restlessness of the child, it is found to be impossible to apply, effectually, any of the washes to the throat, by means of a sponge or swab, they may be injected into the mouth through a small syringe, the nostrils being closed, to prevent their immediate escape. Any of the local applications noticed above, may be applied in this manner, with the exception of the nitrate of silver or the mineral acids.

When the disease is attended with a profuse and exhausting diarrhoa, we may employ the cretaceous mixture, with the addition of the tineture of Kino, or—what we have found particularly beneficial in such cases—a combination of powdered galls, camphor, and ipcea-

euanha, or the acetate of lead, in solution.

a R.—Mucil. G. Acaciæ, Ziij.
Cretæ ppt. Zj.
Tinct. Kino, Zij.—M.
A tca spoonful every two or three hours.

bR.—Pulv. Gallæ, 3j.

"Camphor. gr. iv. ad vi.
"Ipceacuanha, gr. iij. ad. iv. M. f.
chart. No. xij.
One to be given every three hours.

We need scarcely refer to the importance of keeping the apartments occupied by patients labouring under pseudo-membranous inflammation perfectly clean, and of a moderate equable temperature, and freely ventilated.

4.—Parotitis.—Inflammation of the Parotids.—Mumps.

Inflammation of the parotids, generally occurs epidemically, and seldom attacks the same individual more than once. In the majority of cases, it is a very trifling affection, subsiding spontaneously in a few days; while in others, it is attended with very considerable

swelling and pain, and febrile symptoms of some intensity.

It is usually preceded by some degree of chilliness, succeeded by increased heat of the skin, and a sense of pain, or uneasiness, in the region of one, or both parotids. A stiffness of the jaws, producing some difficulty of mastication, is, very commonly, present. or later, a degree of tumefaction is observed, behind the angle of one, or both jaws, with, frequently, augmented heat and redness, and, more or less, severe pain, which is increased by the motions of the jaw, and by pressure. The swelling, in general, goes on increasing, producing a large, hard, movable tumor, sometimes on both sides of the neek. The skin, covering the tumor, is, frequently, unchanged in colour; and, oecasionally, when the tumefaction is rather ædematous than inflammatory, the colour of the skin by which it is covered, is even paler than natural. (Andral.) In severe cases, the swelling assumes a bright or deep red colour. The inflammation frequently extends from the parotids, to the submaxillary glands, and is attended with symptoms of considerable febrile excitement, increased thirst, and constipated bowels.

The tumefaction generally attains its height by the fourth or fifth day, when it begins gradually to diminish, and soon entirely disap-

pears. The febrile and other symptoms declining and disappearing, with the diminution and resolution of the swelling in the neck. It is extremely rare for the disease to terminate in suppuration, though a few instances of this are on record.

A curious circumstance in connection with this disease, is, the liability of the inflammation suddenly to disappear from the neck, and be immediately followed by a painful swelling of the testicles, in the male, and of the mammæ in the female. The latter affection, under an appropriate treatment, in general terminates very promptly by resolution; in males, it has been known, however, to produce an entire absorption of the testicle. (Hamilton.) In some instances, the inflammation suddenly ceases in the testicles or mammæ, and the pain and tumefaction of the parotids reappear.

Instances occasionally occur, in which the sudden subsidence of the inflammation of the parotids, has been succeeded by intense febrile symptoms, and more or less cerebral disease, indicated by deep coma, convulsions or delirium. This occurrence has taken place, even in cases in which the transfer of the irritation had taken place

to the mammæ or testes.

Parotitis generally occurs in children over five years of age; and, as we have already remarked, the occurrence of one attack, usually produces such a change in the parts affected, or in the organism generally, as to prevent a recurrence of the disease in future. Males are said to be more frequently attacked than females:—our own experience does not confirm the truth of this observation; we have certainly met with the disease as often in females as in males.

It is evidently produced by some epidemico-endemic influence, it being, most generally, confined exclusively to certain localities; though it is probable, that, with the predisposition produced by the prevailing atmospherical influence, exposure to cold, or sudden transitions of

temperature, may tend to bring on an attack.

The disease prevails at all seasons, and in almost every variety of climate, but it is said to be much milder, and metastasis less frequently to occur, when it prevails in warm and dry, than in cold and damp weather. (Marley.) We have found the disease, however, to be but

little influenced by the state of the atmosphere.

Parotitis, is seldom either a severe or dangerous affection, and, in the majority of instances, spontaneously disappears, when the patient is kept within doors, and upon a mild, unirritating diet. It will be proper, in most cases, to administer a saline purgative, to keep the neck moderately warm, and to immerse the lower extremities in warm water, the child being, at the same time, kept at rest, and upon a plain, farinaceous diet.

Should the tumefaction of the neck be very extensive, and attended with considerable pain, heat, and fever, it will be prudent to apply leeches to the seat of the disease, in numbers proportioned to the extent of the local symptoms; and, after the bowels are fully evacu-

ated by a mixture of sulphate of soda and magnesia, the following may be administered internally.^a

* R.—Sulph. Sodæ, Jiv. Solve in Aq. puræ, Jiv. et adde Tart. ant. gr. j.
Spir. æther. nitrici, Jiij.
Sacch. alb. Jvj.—M.
Dose a tea spoonful every three hours.

Warm pediluvia will be found beneficial, and, in many cases, the

tepid bath.

When the testicles or mammæ become affected, leeches may be applied to these parts, followed by emollient fomentations; purgatives, and antimonials, will likewise be proper, according to the nature and extent of the symptoms present. It has been generally recommended, to attempt by stimulating applications to the neck, "to bring back the inflammation to the parotids." We do not, however, believe, that any good can result from this practice; according to our experience, it is not calculated to effect the desired result; and, if it were so, no advantage will be gained; the inflammation of the testicles or mammæ, being as readily controlled, by its appropriate remedies, as when seated in the parotids.

When symptoms of cerebral disease manifest themselves, these should be promptly attacked by leeches to the temples, or behind the ears, active purgatives, warm sinapised pediluvia, cold applications

to the scalp, and antimonials.

Angina Externa.—Under the name of phlegmone parotidea, Dr. Good describes a very common affection in children, consisting in an inflammatory tumor, occurring in the neighbourhood of the parotids, and proceeding slowly on to suppuration, forming, often, an extensive abscess. The same disease is described by James, in his "Observations on the general Principles and on the particular Nature and Treatment of various species of Inflammation," as angina externa. Both names are founded upon an erroneous pathology; the affection not consisting in an inflammation of the parotid, but in an inflammation of the cellular tissue surrounding the parotid, or other glands of the throat, generally circumscribed, but often diffused.

The disease generally commences in the same manner as parotitis. The swelling is, however, more extensive, red, and painful; in many cases preventing deglutition, and rendering the respiration so difficult, that the patient can scarcely sleep, from the sense of impending suffocation. There is, ordinarily, considerable febrile excitement. When the swelling is very great, extensive ædema of the face, not unfre-

quently occurs.

Suppuration usually takes place, sometimes very early, but, in the majority of instances, very slowly; the swelling becomes more prominent at some part of its surface—the skin here becomes paler—a fluctuation is soon after detected, and, sooner or later, the skin gives way, and a discharge of healthy pus takes place. The tumor now

gradually diminishes in size, and elecatrization takes place, and all symptoms of inflammation, finally, disappear. Often, some degree of hardness of the parts occupied by the inflammation, remains for a considerable time, and only diminishes by very slow degrees.

It occasionally happens, that the inflammation and swelling is situated immediately below the chin, and we have seen cases, when it has occupied the whole of the front of the throat from ear to ear.

Instead of a circumscribed inflammation and suppuration, the inflammation is, oecasionally, deep seated and diffused, and the pus, when it forms, is liable to extend, under the angle of the jaw, to the pharynx, or downwards into the upper part of the thorax, producing extensive destruction of the cellular membrane about the neck, and great distress to the patient. In this form of the disease, the external swelling is less prominent and eircumseribed, and there is less redness of the skin. When suppuration takes place, the swelling acquires a doughy feel, and an indistinct fluctuation may be observed at one or more points. The matter is slow in arriving at the surface, and discharging itself externally. In some instances, distinct, deep seated collections of matter form, and the pus, mixing with the dead cellular membrane, becomes putrid, and the evolution of gas thus produced, causes a kind of emphysematous condition of the parts. The febrile symptoms, assume a low typhoid character, the strength of the patient is rapidly exhausted, and death very generally ensues; or, if recovery takes place in these extreme cases, an extensive and unsightly cicatrix deforms the patient for life.

Inflammation of the cellular tissue of the neck, generally occurs in ehildren of gross plethoric habits, particularly in those who are fed upon a diet consisting principally of coarse animal food, in which they are allowed to indulge to excess. It is, very frequently, connected with more or less disease of the alimentary canal. We have seen the disease in children of almost every age; it is more common, however, subsequent to the period of dentition, than in infants at the breast. In, perhaps the majority of cases, the inflammation is perfectly circumscribed; and, if suppuration ensues, a simple circumseribed abseess results, the disease being rather troublesome and painful than dangerous; but, in children of an unhealthy habit, the inflammation is oceasionally diffuse, and unless a free exit is given to the pus by early incisions, it is an affection attended with severe

suffering, and very generally terminates fatally.

In cases of simple phlegmonous inflammation the treatment consists in the application of leeches to the neck, in numbers proportioned to the extent of the inflammation, and repeated, after a short interval, if the local symptoms are not sufficiently reduced by the first application. After the leeches, the tumor should be covered with pledgits of linen, kept constantly wet with cold water. A dose of calomel should early be administered, followed by a sufficient dose of sulphate of magnesia, to ensure its speedy operation. The patient should be restricted to a mild unirritating diet; in severe eases, no

other food being allowed than barley water or water gruel. In cases, attended with considerable febrile excitement, the solution of sulphate of soda, with tartarized antimony, as directed in parotitis, will be beneficial. So soon as a disposition to suppurate is observed, the tumor should be covered with emollient poultices, frequently renewed; and, when a distinct fluctuation is observed, the abscess should be opened with the lancet, and a free exit given to the pus;—the application of the poultices being continued, until cicatrization commences, when a dressing of simple cerate spread upon lint, may be substituted.

When the inflammation is diffuse, a similar treatment will be demanded in the early stage; but as soon as the swelling of the neck acquires a doughy feel, especially if there is great difficulty of swallowing, impeded respiration, or a constant dry cough, free incisions should be made, followed by the application of emollient poultices. If the patient's strength becomes depressed, a plain nourishing diet should be allowed; and, if necessary, moderate doses of the cold infusion of bark, or of a solution of the sulphate of quinia. The treatment of each case, must, however, be governed by the particular symptoms present; the safety of the patient not unfrequently depending entirely upon the promptitude and judgment of the practitioner.

CHAPTER III.

ŒSOPHAGITIS.

INFLAMMATION OF THE ŒSOPHAGUS.

It is to Billard, that we are indebted for our knowledge of the esophagitis of infants:—he first pointed out its frequent occurrence in the first period of infancy, and described its diagnosis. From him, therefore, we shall be under the necessity of borrowing our account of the disease, it being one mentioned by no other writer, and in relation to which our own observations have not furnished us with any additional facts. We have repeatedly recognized in infants, the symptoms referred by Billard to inflammation of the esophagus, but have not had an opportunity, as yet, of testing, by an examination after death, the accuracy of his diagnosis.

The principal symptom of esophagitis in infants, is frequent vomiting, occurring almost immediately after the deglutition of drinks or aliments; which are discharged almost in the same state in which they

were taken. The child refuses the breast, and fluids generally—but often swallows, without much difficulty, half solid aliments. The undigested food and drinks vomited by the patient, are occasionally mixed with matters secreted by the stomach, particularly if the latter be affected at the same time, with inflammation. More or less pain is probably experienced along the whole track of the æsophagus, but at the age at which the disease occurs, we cannot determine its presence by any exterior sign; it is probable, however, that pressure upon the throat, in the direction of the æsophagus, may excite the cries of the child. Nutrition is interrupted, and emaciation rapidly ensues. Æsophagitis is seldom accompanied by any degree of febrile excitement.

The disease may consist in a simple erythematic inflammation of the mucous membrane of the esophagus; in inflammation, with alter-

ed secretion, or in gangrenous inflammation.

As esophagitis is almost invariably preceded by stomatitis, it is probable, that according as the mouth is affected with inflammation, attended with a curd like exudation, or with follicular inflammation, the inflammation of the esophagus will also be attended with altered secretion, or with apthous ulceration. It is, however, difficult to distinguish the existence of ulcers, or gangrene of the esophagus, unless the matters vomited contain shreds, derived from the disorganization of the esophagial mucous membrane. More extended observations will probably enable us to form a more accurate diagnosis of the several forms of the disease. (Billard.)

The pathological changes detected after death, in cases of æsophagitis, are vivid redness, with destruction of the epithelium, of some portion of the mucous membrane of the æsophagus, especially of its upper portion; apthous ulceration; curd like exudation, more or less extensively diffused; separation of the epithelium, often in large shreds; numerous red or dark coloured striæ, where the epithelium is not destroyed; large, irregular eschars of a black colour, with intervals of deep, bright red excoriations, and gelatinous softening of nearly

the entire thickness of the œsophagus.

The pharynx, in general, exhibits considerable injection; the glottis is infiltrated and reddened. The stomach is often perfectly free from disease, but occasionally presents the various lesions incident to gas-

tric inflammation.

The hyperæmia of the mucous membrane of the æsophagus, which always exists in the early stage of infancy, is the chief cause of the frequency of æsophagitis at this period; its occasional causes are the same as those of stomatitis. It may be produced by too hot or stimulating food. When infants are fed with the spoon, if wine or spiced victuals, or broth, milk, or panada of too high a temperature be given them, we can readily conceive that a very serious irritation may be excited in an organ, already predisposed to disease, in consequence of its habitual state of hyperæmia. (Billard.)

The treatment of esophagitis is very simple. The child should be

debarred from all stimulating and hot drinks; it should be supplied, at short intervals, with small portions of some plain, mucilaginous fluid, as gum water, or an infusion of the pith of sassafras, or of the inner bark of the slippery elm; the throat, externally, should be covered with an emollient poultice, especially when the esophagitis succeeds to stomatitis; a few grains of calomel may be administered, followed by injections of milk with the addition of sugar. If necessary, the strength of the patient may be supported by injections of milk and broth, or milk with rice flour, tapioca, or arrow root.

We have derived advantage in cases presenting the symptoms of cesophagitis, from leeches along the sides of the neck, and internally a

solution of acetate of lead.

R.—Acetat. plumbi, gr. iv.
Acid. acet. impur. M iv.
Aq. puræ, Jj.—M.
Dose a tea spoonful every three hours.

CHAPTER IV.

DISEASES OF THE STOMACH.

1.—Indigestion.

WE employ the term indigestion, to indicate an affection of the stomach, very common in children, in which the function of that organ is suspended or disturbed, and the food either unchanged or imperfectly digested, is discharged by vomiting or by stool, while no symptoms exist, indicative of gastric inflammation, or disease of other organs. Indigestion is invariably dependent upon too much, or improper articles of food, or upon some accidental circumstance, interfering with the process of digestion. There can be no doubt that more or less irritation of the mucous membrane of the stomach, is present in every case, and that if the cause of the functional disturbance be continued, or repeated, inflammation will be excited of an acute or chronic character.

Nausea and vomiting, are the most common symptoms of indigestion, during infancy. Infants at the breast, will repeatedly discharge from the stomach, immediately after sucking, by a species of regurgitation, or by actual vomiting, a portion of the milk taken, without appearing to suffer any inconvenience. The vomiting in these cases, arises generally, from an overloaded state of the stomach, and is unattended by nausea or straining. The milk is usually returned

unaltered; occasionally, however, it is coagulated in masses of greater or less size. This species of vomiting, generally occurs in very young infants, of a robust habit, particularly when nourished by a nurse, in whom the supply of milk is profuse, and flows with great freedom. It is rather salutary than injurious, by preventing the effects of over distension of the stomach; hence the common saying among nurses, that those infants who throw up their milk thrive the best. But as the cause is an habitual repletion of the stomach—more milk being taken than can be readily digested—it must be evident, that in every instance, there is danger of a disturbance of the digestive function, or even more serious injury being, sooner or later, induced. The cause of the vomiting should therefore be removed, by preventing the infant from sucking too much at a time, or too frequently in the course of the day. It should be removed from the breast, the moment it begins to dally with it, or as soon as it ceases to suck with avidity, as if it were gratifying a necessary and proper appetite. (Dewees.) A common cause of vomiting from repletion of the stomach in infants, is applying them to the breast whenever they are fretful, or with the view of lulling them to sleep, or allowing them to lie at the breast all night.

There is, in some infants, also, a disposition to eject the milk taken into the stomach, that is induced by dandling them in the arms or jolting them upon the knee, or walking them about soon after they have sucked, even when no undue quantity has been taken by them; as a general rule, but especially when vomiting is readily excited, the infant should be allowed to remain perfectly quiet for a

short time after its removal from the breast.

A common error committed by nurses, is that of giving the breast to the infant, immediately after they have ejected the contents of the stomach. This should be avoided in every instance, it being calculated to increase the irritability of the stomach, and render the vomit-

ing more frequent.

The more or less coagulated state of the milk discharged from the stomach, most generally arises from its having remained in that organ, a short time before its ejection; the milk invariably undergoing coagulation in the infant's stomach, previously to its digestion. In some cases, however, the coagulation of the milk, as well as the vomiting, appears to be due, to the secretion in the stomach, of an undue amount of acid. The breath of the infant, and the coagulated milk that is thrown up, have then a sour smell, and very often, sour, curdy evacuations take place from the bowels, preceded by more or less griping. The cause of this acidity it is very difficult to determine; whether it results from an irritation of the stomach, causing an excessive secretion of acid in the stomach, or from the occurrence of acetous fermentation in the milk, we have been unable to satisfy ourselves.

It is not uncommon for dense coagula of milk to form in the stomach of an infant; in some cases causing severe colicky pains, and in others, violent convulsions, which cease upon the rejection of the coagula. The retention of these coagula in the stomach, appears to arise from a disturbance of the digestive process, independent of gastric inflammation; though some degree of this is liable to be induced, if the irritation of the dense coagula does not cause their

speedy ejection by vomiting.

Not unfrequently, repeated vomiting occurs inchildren, attended with paleness, and other indications of considerable nausea; preceded, generally, by severe griping pains of the bowels, and followed by more or less diarrhea; the matters vomited, whether milk, or other articles of food, are, usually, partially digested, and exhale an acid or rancid odour. Preceding the vomiting, the child exhibits, ordinarily, a considerable degree of uncasiness, and continues fretful and languid for some time after the spontaneous evacuation of the stomach and bowels. In such cases, we have a disturbance of the digestive function, attended with considerable irritation of the mucous membrane of the whole of the alimentary canal, but seldom any symptom of positive inflammation. The mischief is almost invariably owing to improper, or too much food.

When the disease occurs in infants at the breast, its cause is, generally, to be sought for in some condition of the mother's or nurse's milk, by which it is rendered either indigestible, too irritating to the stomach, or unadapted to the functional powers of the latter; or to the child being occasionally fed with improper kinds of artificial food.

We have already spoken, in a former section of this treatise, on the importance of a proper regulation of the diet of a female, during the period of suckling. Every physiologist is aware of the change produced in the properties of the milk, by the nature, as well as by the quantity of the food, habitually taken. Too much, or too little food; a too stimulating diet; the use of vinous or distilled liquors, more especially if taken in excess; and articles of food of difficult digestion, cannot fail to affect the secretion of milk, and render the latter unfitted for the nutriment of the infant who partakes of it; milk thus deteriorated, will very generally produce irritation of the infant's stomach, and all the symptoms of indigestion.

If an infant, in consequence of the inability of the mother to suckle it, is nursed at the breast of a female, whose own child is several months older than it, indigestion will very generally ensue, in consequence of the milk containing an amount of caseum, to the digestion of which, the stomach of the younger child is inadequate; the proportion of caseum in the milk of the human female, always augment-

ing with the age of the infant. (Payen).

The occurrence of the menstrual discharge, is generally enumerated as a cause of deterioration in the milk, calculated to occasion serious injury to the infant who partakes of it. When the catamenia are suspended during the first eight or nine months subsequent to parturition, and then re-appear, there will, very generally, be found to take place a diminution in the supply, and a decided change in the properties of the milk; and the child very generally suffers, if it be continued at

the breast. But we are by no means convinced that every occurrence of the menses, during lactation, is calculated to produce similar effects upon the milk. We know several females who menstruate regularly during the entire period of suckling, and their infants thrive equally well with those of mothers in whom the catamenial discharge is suspended. From a series of observations, recently published, it has been ascertained, that the health of children nursed by menstruating females, suffers no kind of injury. (Raciborski.) If, however, upon the appearance at any time of the menses, the milk is found to disagree with the child at the breast, it will be prudent to cease suckling it, so long at

least, as the discharge continues.

Pregnancy is, also, set down as producing an alteration in the milk, unfitting it for the nourishment of the infant. During the first three months of pregnancy, we have certainly seldom noticed any particular change to occur in the milk; at a later period, however, it is probable, that the safety of the mother, as well as the health of the infant at the breast, will require it to be weaned, or if too young for this, that the milk of a healthy nurse be substituted for that of the mother. It is true, that infants have been suckled to a late period of pregnancy, or even to its termination, without apparent injury; while in other cases, so great a deterioration of the milk has occurred, as to require that the child should be taken from the breast

at a very early period. (Dewees.)

Another cause which is generally supposed to render the milk of the mother injurious to an infant, is continuing the latter for too long a period at the breast. This is unquestionably true; if after the appearance of the molar teeth, the child be confined exclusively to the breast, symptoms of indigestion will very generally occur; and even with a supply of other food, continuing it at the breast after the ninth or tenth month, will often be found productive of injury. And yet there are striking exceptions to this rule; some of the finest children we have seen, were among those who were suckled—taking, however, at the same time, a portion of other food—until they were fifteen months old. We may remark, that in all these cases, the menstrual discharge was sus-

pended during the whole period of lactation.

Intense grief, mental anxiety, paroxysms of violent passion, or any long continued or violent emotions of the mind, are unquestionably, causes of very considerable deterioration in the milk:—severe vomiting, and even general convulsions, have been known to result, from the child being applied to the breast, immediately after the nurse has experienced any intense mental excitement—whether of an exciting or depressing character; and it is a general remark, that the children nursed by females who are labouring under intense grief, or mental anxiety of any kind, seldom thrive. We have met with several cases of indigestion in infants from this cause, where the safety of the child required its being taken from the mother's breast, and where every symptom of disease ceased, soon after it was furnished with the breast milk of a healthy nurse.

It is needless to say, that most of the acute, and the generality of the chronic diseases, produce changes in the milk, which entirely unfit it for the nourishment of an infant, even where the mother is able to perform the office of nurse. When the milk of the mother or nurse is perfectly healthy, adapted in all respects to the condition of the infant's digestive organs, and sufficient in quantity, indigestion may be produced, by the practice, too commonly pursued, of giving to the child, occasionally, a portion of artificial food—often of the most indigestible quality. Previously to the appearance of the first molar teeth, under ordinary circumstances, no other food is required, than the breast milk of the mother; and every kind of food, which differs materially in its qualities from the latter, will produce serious disturbance of the digestive organs. We have seldom known an infant, to whom has been given, in addition to its mother's milk, any of the various compounds of bread and water, bread and milk, flour and milk, and the like—"vile nursery compounds,"—who has not suffered from indigestion, and often from severe irritation, or even inflammation of the stomach and intestines. Disease of the alimentary canal being more certainly produced, in the generality of these cases, by the carminatives, antacids and opiates, administered to relieve the vomiting, expel the wind, and allay the griping caused by the improper diet.

Slight symptoms of indigestion are frequently attendant upon the process of dentition, in consequence of the irritation of the gums being extended to the digestive organs; they seldom, however, occur to any extent, unless when too much food, or food of too stimulating

a quality, is allowed at this period.

Children too early weaned, are especially liable to be troubled with indigestion, as well as those who, weaned at a proper period, are placed immediately upon a too rich and stimulating, or otherwise unfitting diet. Vomiting and diarrhea—more or less griping pain of the bowels—and rapid emaciation, are the prominent symptoms induced. The matters vomited, consist usually, of the partially digested aliment, often of a decidedly sour or rancid smell:-the dejections from the bowels are similar in character. In some cases, however, the food taken into the stomach passes through the alimentary canal, and is discharged entirely unchanged, while little or no vomiting is present. The appetite often continues unabated, or is even increased; but from the disturbance or suspension of the digestive process, the nutrition of the system ceases, and the child dies from inanition; in many cases, however, the irritation of the alimentary canal is reflected upon the brain, and violent convulsions supervene; or a chronic inflammation of the mucous membrane may occur.

In children brought up by the hand, or improperly fed subsequently to weaning, indigestion occasionally occurs, attended by symptoms of considerable severity. There is generally loss of appetite, peevishness, restlessness and want of sleep; the tongue is covered with a layer of white or yellowish mucus; the breath is often sour; and in some cases, apthæ appear upon the parieties of the mouth. There is constant diarrhæa, intense thirst, and great emaciation and exhaustion.

The diarrhæa, after a time, frequently diminishes, or ceases entirely, but soon returns with increased violence—the discharges being a thin, serous fluid, of a yellowish or greenish colour, and exhaling a strong, acid smell. The face and extremities become cold; the pulse small and irregular; the respiration quick and short. The countenance becomes shrunk and pale. The child utters continually, a low piteous moan, or lies upon his back, with the eyes fixed, glassy, and half closed. No pain or tenderness is indicated upon gentle pressure of the abdomen; the latter, however, is often greatly swollen and tympanitic. The child becomes more and more exhausted, and, finally, expires quietly, and without convulsions.

This appears to constitute that form of disease described by Camerer, Pommer, Hergt, Romberg, Droste, and others, as gastro-malacia; the stomach and intestines generally, presenting a gelatinous softening of their parietes, to a greater or less extent, but without any indications of inflammation; the softening appearing to depend upon a diminished cohesion of the tissues—the result of disordered or

suspended nutrition.

In older children, indigestion is usually the result of too much or improper food. Over-feeding is among the most common of its causes, and is often induced by parents supposing that the strength and growth of the body is best promoted by a large amount of animal food. Acid and unripe fruits, and the cakes and confectionary, with which children are so apt to overload their stomachs, very generally produce an attack of indigestion, attended with excessive nausea, a sense of weight and oppression about the precordia, severe griping pains of the bowels, followed, sooner or later, by repeated vomiting, and copious diarrhæa; the attack being succeeded, in some cases, by long continued loathing of food; and in others, by an augmented appetite: this difference depending, probably, upon the greater or less degree of irritation produced in the stomach.

The affection of the stomach and bowels we have described as indigestion, is unattended with febrile excitement; it is essentially a disturbance or suspension of the functions of the digestive organs, in consequence of the food taken, being too great in quantity, or unadapted in quality to undergo the changes necessary to its proper assimilation. We must, however, recollect, that in all cases, more or less irritation of the mucous membrane of the alimentary canal is produced, and that if the causes of the disease are continued, inflammation of that tissue will be very liable to ensue; or, if this be not the case, from defective nutrition alone, softening of the stomach and

bowels, or disorganization of other organs may result.

It is hardly necessary to enumerate the symptoms of indigestion, as it occurs during infancy and childhood, these having been already pointed out. They are, chiefly, uneasiness after eating, fretfulness and peevishness, nausea, griping or colicky pains, and frequent acid eructations, followed by vomiting, and generally by diarrhea. The matters discharged by vomiting and stool, being the food taken, partially or not at all altered, and exhaling a sour or rancid odour, and

occasionally mixed with yellow or greenish bile; the absence of febrile symptoms and of tenderness of the epigastrium; more or less emaciation; with paleness of the surface, and occasionally, flatulent distension of the bowels. The appetite is often unimpaired, or even increased. Not unfrequently the irritation is reflected from the bowels, upon the brain, producing convulsions; or upon the nerves of the larynx, producing spasmodic constriction of the glottis; or inflammation of the stomach and bowels may take place; in other cases the vomiting or purging continuing unabated, extreme emaciation ensues, and the child dies from inanition.

When indigestion is properly treated in its early stages, it is generally a very manageable disease, and even at a later period it may often be remedied; but protracted cases, especially when we find it difficult to remove its cause, and when excessive marasmus has occur-

red, very generally terminate fatally.

The dissections in cases of simple indigestion have been very rare; death seldom taking place excepting in protracted cases, or until structural changes have occurred in the alimentary canal, or some other organ. Traces of inflammation are occasionally observed in the mucous membrane of the stomach, or intestines; more commonly, however, there is a pale, anemic condition of the membrane, with softening, sometimes in circumscribed patches, and in other cases, involving a considerable portion of the mucous coat of the stomach, or small intestines. This softening is evidently the effect of imperfect or suspended nutrition, and is often met with in the brain, and other organs. (Andral.) Portions of the intestinal tube are generally distended with gas, and have a transparent appearance, from the small amount of blood in the vessels, and the paleness of all the coats. A quantity of white frothy mucus is frequently found in the stomach and intestines. Invagination of the intestines is also, a very common occurrence.

The treatment of infantile indigestion consists almost entirely in the removal of the cause, by which the disturbance of the functions of the stomach has been produced. In young infants, when mere repletion of the stomach produces a regurgitation or vomiting of the milk, we have already pointed out the proper remedy; namely, preventing the infant from sucking too much at a time, and being careful not to place it too often at the breast; and when the irritability of the stomach is such as to cause the ejection of its contents upon the slightest motion communicated to the infant, being careful to allow it to remain at perfect rest for some time after it has been at the breast. A young infant is naturally inclined to perfect quietness, and generally to sleep, after sucking, and the interfering with this inclination is seldom unattended with injury. Rude dandling, jogging upon the knee or in the cradle, jolting in the arms, or even carrying a young infant rapidly up and down the room, is at all times improper, but particularly so, immediately after taking it from the

When, from any cause, the milk of the mother is found to disagree

with the infant's stomach, if the cause of this be under the control of diet and regimen, it should be at once removed. Mothers often produce a deleterious change in their milk, in their attempts to improve its quality, and keep up the supply, by partaking of too much food, and that, generally, of a too stimulating kind; and often by indulging daily in malt liquors, or in wine, during the period of suckling. A plain, moderate diet, composed, chiefly, of farinaceous articles, and plainly cooked beef or mutton, once a day, with a sufficient amount of daily exercise, will be found, invariably, to render the supply of milk fully adequate to the wants of the infant, and of a far better quality than when the stomach is overloaded daily with a variety of rich and stimulating food. Water, we have already said in a former part of this treatise, is the only proper drink for a female, whilst suckling; and we here repeat, that so far from malt and vinous drinks promoting the secretion or improving the qualities of the milk, they almost invariably produce a contrary effect. Whatever is calculated to interfere with the digestive and assimilative functions of the mother cannot fail, by deteriorating the milk, to cause more or less injury to the infant. On this account, the use of strong tca and coffee should be abstained from; late hours, and the frequenting of crowded assemblies should be avoided; regular periods of retiring, and early hours of rising should be observed; and as soon after delivery as prudence and the state of the weather will permit, exercise, at first passive, and subsequently of a more active kind, should be taken daily, in the open air; violent exercise should, however never be indulged in.

Anxiety, and every intense excitement of the mind, should, if possible, be avoided:—a female, of a calm, cheerful, and contented disposition, makes, always, the best nurse. Violent paroxysms of passion often produce so deleterious a change in the milk, as to cause almost immediate vomiting and purging, or even convulsions, in the infant that partakes of it. (Boerhaave, Baumes, Hufeland.) In cases of indigestion, occurring in the children of mothers of violent tempers, or of such as are labouring under deep mental depression, or intense excitement of the mind, the only remedy is, either to nourish the child by the hand, or to substitute the breast of a healthy and compe-

tent nurse.

Where a sufficient supply of milk of good quality, is furnished by the maternal breast, no other food will be necessary for the child, until dentition has made some progress, when some additional aliment may be allowed; but upon this subject we have said all that is necessary when treating of the hygienic management of infants. It is only necessary in this place to remark, that when young infants are troubled with indigestion, and the cause cannot be traced to the condition of the mother's milk, it will, in general, be found to result from the injudicious overloading of the infant's stomach with some kind of pap or panada,—articles which are invariably injurious, even when from a deficient supply of milk, on the part of the mother, additional aliment is required.

In addition to the proper regulation of the infant's diet, in cases of

indigestion, the functions of the skin should be promoted by the daily use of the warm bath, followed by gentle frictions to the surface; and when the weather will permit, the child should be carried into the open air daily. Riding short distances in an open carriage, or sailing in a boat, when practicable, will invariably be found advantageous. The body should be preserved of a proper and equable temperature, by appropriate clothing, and by rooms sufficiently heated in winter, and well ventilated in summer.

Medicines of any kind will seldom be required in a case of simple indigestion. When considerable nausea and retching occur without free vomiting, it may, however, be proper to unload the stomach by a gentle emetic of ipecacuanha. If considerable acidity of the stomach exists, a dose of calcined magnesia may be given; or, if the bowels are constipated, of equal parts of magnesia and rhubarb; if diarrhœa be present, the simple cretaceous mixture, or what we prefer, the prepared chalk in powder, combined with small doses of ipecacuanha, will be proper.

*R.—Cretæ ppt. 3j.
Ipecacuanhæ, pulv. gr. ij. ad iij.—M.
f. ch. No. xij.
One to be repeated every three hours.

Dr. Kuhn preferred, in all cases of acidity affecting the alimentary canal of children, and unattended with inflammation, the aqua ammonia, to either the magnesia or carbonate of lime. He prescribed it in the following formula.

aR.—Aq. puræ, Ziij.
Gum. acaciæ, pulv. Əij.
Saech. alb. puræ, Zij.
Aq. einnamon. simpl. vel.,
Aq. anisi, Zss.—M. et adde
Aquæ ammoniæ, M. xlviii.—lxxx.

A teaspoonful to be given every one, two, or three hours, according to eireumstances.

When the infant is troubled with severe griping pains, the warm bath, friction with some anodyne liniment, followed by warm fomentations to the abdomen, and the use of the aqua ammonia, as directed by Dr. Kuhn, will be found, in many cases, to afford prompt relief. The remedy from which we have seen the best effects to result in the colic of children, from indigestion, is a combination of magnesia, extract of hyosciamus, calomel, and ipecacuanha. In some cases, a few drops of aq. camphorata, or of the etherial solution of camphor, will promptly allay the colicky pain in these cases. Three to five drops of spirits of turpentine, mixed with a little sweetened water, and repeated in the course of an hour, will, also, often produce a decidedly favourable effect.

²R.—Magnesiæ calc. Đijss. ad Jj. Ext. Hyosciami, gr. viij. to xij. Pulv. Ipecae. gr. iij. Calomel, gr. iij.—M. f. chart. No. xij.

One to be given every two or three hours.

^bR —Camphoræ, 3j. solve in Æther. Sulphurie, 3j.

Add thirty drops of this solution to one ounce of simple annisced water, with two drachms of refined sugar. The dose is one or two teaspoonfuls, according to the age of the child.

When the pain is very intense, and is not promptly allayed by the remedies already enumerated, a dose of tincture of opium, adapted to the age of the child, may be given in a little sweetened anniseed water, or it may be administered in the form of enema combined with thin starch. Great caution should, however, be observed in the employment of opiate anodynes in the affections of infants, neither to resort to them unnecessarily, nor to repeat them too often. They should be given, also, in small doses, and their effects carefully watched, as very minute doses of the tincture of opium have, when injected into the rectum, not unfrequently proved fatal to infants. (Alison, Christison, Marley, Merriman.)

In cases of indigestion attended with frequent and copious discharges from the bowels, it will, occasionally, be prudent to administer some slight astringent; the tincture of kino will, in general, very promptly suspend the diarrhea. It may be given in combina-

tion with the cretaceous mixture.2

a R.—Mucilag. G. acaciæ, ʒij.
Sacch. alb. puræ, ʒij.
Aq. cinnamon. ʒj.
Cretæ, ppt. Bij.
Tinc. Kino, ʒj. ad ʒij.—M.
A teaspoonful three times a day.

In cases of indigestion from too early weaning, when practicable the infant should be reapplied to the breast, or if this cannot be effected, it should be confined entirely to milk and water, sweetened with loaf sugar, as directed in our section on the diet of infants.

The indigestion occurring at the period of weaning is usually very readily managed by a proper attention to diet, the warm bath, daily exercise in the open air, when the weather will permit, and the removal of any symptom of unusal severity that may occur by the reme-

dies already detailed.

In older children, it will be proper, in most cases of indigestion, to administer an emetic of ipecacuanha, followed, if the bowels are much disturbed, by a moderate dose of magnesia and rhubarb; after which, a proper regulation of the diet, as well in regard to quality as to quantity, will, in general, very speedily remove every unpleasant symptom and restore the regularity and activity of the digestive function. Confining the patient for a short time to a milk and farinaceous diet alone, or with the occasional use of plain meat broths, with the addition of rice or crackers, will be proper. Every species of pastry and confectionary, crude and ascescent fruits, and flatulent vegetables should be strictly proscribed.

Every case of indigestion occurring in children, should be carefully scrutinized and cautiously watched, and if any sympton indicative of the occurrence of even a slight degree of inflammation in any part of the gastro-intestinal mucous membrane, should be detected; if the skin becomes dry and parched, the tongue red at its edges and extremity, and coated on its upper surface with a whitish mucus; or if increased

heat of the epigastrium, with tenderness or pain upon pressure are detected, leeches and fomentations to the abdomen, with cool muci-

laginous drinks internally, will be demanded.

In protracted cases of indigestion in children, with entire suspension of the function of the stomach—the food and drinks passing through the bowels without change as soon as they are taken—but little can in general be done to prevent a fatal result. In some cases, much benefit, however, has resulted from the use of a cold infusion of bark, with the addition of a few drops of hydrochloric acid; from the tincture of the sesquichloride of iron or chalybeate wine in small doses—one or two drops of the first, and from three to six of the latter, in a teaspoonful of water. We have occasionally seen good effects result from the carbonate of iron, combined with hyosciamus and acetate of lead.^a

R.—Ext. Hyosiciami, gr. viij. ad xij.
Carb. Ferri, gr. xxiv. ad xxxvj.
Acetat. plumbi, gr. xij.—M. f. chart. No. xij.
One to be given every three hours.

Friction along the spine, with the weak liniment of ammonia, repeated daily, and frequent exposure to the open air, by riding in a carriage, will, in general, be found useful. The diet should consist exclusively of beef-tea or milk, with the addition of rice flour, or arrow root. What would be the effect of tannin, or of the pure sulphate of alumine in these cases, we are not prepared to say—never having had an opportunity of making a trial of them.

In that form of infantile indigestion in which softening of the stomach is most likely to occur, trial may be made of the hydrochloride of iron, which appears to have frequently succeeded in restoring the healthy functions of the stomach, in the hands of Pommer, Hergt,

Camerer, Droste, and others.ª

*R.—Ferri hydrochlorid, gr. x. ad xv. Mucil. G. Acaciæ, Ziij. Sacch. alb. pur. Zij.—M. A dessert spoonful to be given every hour.

Or,

R.—Tinct. Ferri. sesquichlorid.,
Extract. cinchonæ, aa Əss.
Aq. flor. aurant. Zij.
Syrup. eorum, Zj.—M.
A teaspoonful to be given every hour. (*Droste.*)

2.—Gastritis. Inflammation of the Stomach.

Inflammation of the mucous coat of the stomach is of far more frequent occurrence during infancy and childhood than is generally supposed. It varies in degree, in different cases, from a slight crythematic inflammation confined to a small portion of the gastric mucous membrane, and attended by symptoms so obscure as to cause its exist-

ence, in its earlier stages, to be entirely overlooked; to an intense inflammation of the greater part of the stomach and bowels, accompanied by symptoms of a very decided and violent character, and rapidly producing disorganization of the tissues in which it is seated. It is seldom that the stomach is alone affected; in the great majority of instances, the inflammation extending to the duodenum, and other small intestines.

The leading symptoms of gastritis in the infant are retching or vomiting; increased heat and tension of the epigastrium; shrinking and painful cries when this part is compressed; an expression of countenance indicative of distress; a dry, parched skin; redness of the point and edges of the tongue; a coating of white mucus over its surface, through which the enlarged and florid papillæ protrude; great restlessness; a small and contracted pulse, often greatly increased in frequency; augmented thirst, and, generally, aversion from food. These symptoms vary in intensity in different cases, and are often complicated with others, arising from disease of adjoining or remote organs, by which the gastritis has been preceded, or which become developed simultaneously with, or subsequently to, its occurrence.

The most constant symptoms are, frequent vomiting, heat, tension and pain upon pressure of the epigastrium, and an expression of

countenance indicative of suffering.

The vomiting is most liable to occur upon any drink or food being taken into the stomach, which are almost immediately rejected. The vomiting is occasionally attended with considerable retching, and is evidently, in severe cases, a cause of much suffering to the patient. The matters vomited, are the food and drinks taken; a thick, ropy or frothy mucus, often mixed with yellow or greenish bilious matter;brownish, or dark brown, and even bloody discharges are occasionally observed. The matters vomited, are not unfrequently decidedly acid. A certain degree of heat and tension of the epigastrium are seldom absent:—in some cases, they may be slight, but when the inflammation of the stomach is fully established, and of any degree of intensity, the heat and tension of the abdomen, are very considerable; the heat of this part, in many cases, being the more marked, from the temperature of the surface generally, not being augmented; while that of the lower extremities, is perhaps reduced. The tenderness of the epigastrium may be detected only upon pressure; by the patient starting and moaning, or crying out, with the peculiar acute tone belonging to the cry from pain: or it may be to such an extent, as to render the slightest touch, a source of suffering, and to cause the patient to lie upon his back, with his knees drawn up. In these cases, the countenance, as well as the restlessness and constant cries of the infant, indicate the severity of his suffering. When the child is old enough to express his feelings, he, in general, complains of a burning pain in the stomach. When the gastric pain is severe, respiration is short and quick, and performed, almost exclusively, by the ribs.

Diarrhœa is common in cases of gastritis; the matters discharged

from the bowels, being at first feeal, but subsequently, similar to those ejected by vomiting. Gastritis is occasionally, however, at-

tended with constipation.

The disease is often, especially in young infants, unattended, throughout, with any degree of febrile excitement; occasionally, however, there is considerable fever, with a hot and burning skin, quick and frequent pulse, and delirium, or tendency to coma. In general, the febrile symptoms are remittent, with exacerbations, toward evening, or even later.

Gastritis may terminate in resolution, or in ulceration, gangrene, or softening of the gastric mucous membrane, or of the whole of the

coats of the stomach, causing a perforation of the organ.

In violent cases, great prostration of strength, with profuse perspiration about the head and face, subsequently extending over the greater part of the body, hiccup, cold extremities, a sinking of the pulse, and often convulsions, early occur, and are speedily followed by death.

Gastritis may become chronic, and continue for a length of time, with occasional vomiting—some degree of tenderness and tension of the epigastrium—irregular appetite—occasional diarrhæa, alternating with costiveness—dryness and harshness of the surface—febrile symptoms of a remittent character—and progressive emaciation. White softening of the stomach, with perforation, may occur, in these cases; or, the irritation being transmitted to the brain, effusion in that organ, may take place; or, tubercles becoming developed in the lungs, the patient may die, with all the symptoms of tubercular phthisis.

The causes of gastritis in children, are, either irritating substances—improper or deteriorated articles of food, or some acrid or poisonous matter, introduced into the stomach—cold and moisture applied to some portion of the surface—sudden alternations of temperature—the sudden suppression of cutaneous eruptions, or of the discharge, from ulceration behind the ear. (*Underwood*, *Eberle*.) In many cases, particularly in young infants, the inflammation of the stomach is preceded by an attack of stomatitis; in others, the stomatitis occurs subsequently to the gastritis. The disease would appear to prevail, in some cases, as an epidemic. (*De Rein*, *Cruveitheir*,

Iselin.)

The appearances observed after death, in cases of gastritis, are injection and redness, with thickening, and a softened condition of the mucous membrane of the stomach. The redness may consist in simple injection of the blood vessels, and present an arborescent arrangement:—this occurs chiefly in the slighter cases of the disease:—when the inflammation is more intense, the redness is more or less diffuse; or it occurs in patches of a greater or less extent—in irregular striæ, which follow, generally, the course of the corrugations of the stomach, or in numerous, closely approximated red points. (Billard.) The stomach often contains a quantity of thick, tenaceous mucus. The papillæ or villosities of the mucous membrane, appear, occasion-

ally, to be somewhat enlarged. (Lauret.) In a few cases, large patches of curd-like exudation, adhere to the mucous membrane;—in others, the follicles of the stomach are morbidly developed, forming a number of small, rounded granulations, of a white colour, terminating in a black point; (Billard;) or the mucous membrane may be the seat of apthous ulcerations, or of ulceration, extending through the inner and middle coats.

When the inflammation of the stomach terminates in gangrene, which is of exceedingly rare occurrence, (we have never met with a single case,) sloughs of various extent, implicating the whole of the coats of the stomach, will occur, which, on becoming detached, give rise to perforations; (Billard;) or the mucous membrane alone may be

reduced to a gangrenous condition. (Denis.)

In cases of gelatinous softening of the stomach, the mucous membrane will be found reduced to a jelly-like consistency; or the softening may extend to all the tissues of the stomach, rendering them liable to be perforated by the slightest force; or a complete perforation of the coats of the stomach may have occurred. All of these conditions may exist in the same stomach, at different points. (Iselin.) These softenings, or perforations, occur especially at the great curvature, seldom extending beyond the most depending parts. (Baron.—Billard, Iselin.) Some observers, however, describe the softening as involving, occasionally, the greater part of the mucous membrane. Distinct traces of inflammation, are occasionally observed, surrounding the softened parts; and the parieties of the stomach often present a serous infiltration. (Billard.)

The softening here described, is unquestionally the result of inflammation. It is preceded by the most unequivocal symptoms of acute gastritis,—constant vomiting, increased upon any thing being taken into the stomach—intense thirst—pain, induced by pressure upon the epigastrium—distension and increased heat of the latter—a countenance and cries, indicative of suffering—copious diarrhæa, the dejection being at first of a greyish colour, but subsequently, a yellowish or greenish serum decidedly acid. The softened parts are occasionally surrounded by distinct traces of inflammation; patches of inflammation often exist also in different portions of the intestinal canal, especially in the small intestines. Softening and perforation, in many cases, occur simultaneously in the stomach, æsophagus, small intestines,

mesentery, and lungs. (Iselin)

Many pathologists have denied the connection of softening of the stomach, with inflammation of that organ, and maintain, that in the majority of cases, it is a cadaveric phenomenon, resulting from the action of the gastric juice upon the tissues of the stomach; (Carsswell, Allan Burns, Gairdner, Carwell, Hope); others refer it to a paralysis of the nerves of the stomach, with increased acidity of the gastric fluid, by which the stomach is dissolved during the lifetime of the patient. (Jæger, Zeller, Camerer.) A somewhat similar opinion is entertained by Laisné, Chaussier, Desbarreaux, Bernard,

and others. Without denying that the stomach may be dissolved after death, in consequence of the generation in its cavity, of an excess of acid; and being well aware that a softening of the tissues of the stomach, and of other parts of the alimentary canal, may be produced by causes affecting the nutrition, and impairing the cohesion of the various tissues, we are still convinced, from the result of our own observations, that the gelatinous softening, so frequently observed in children that have died of acute gastritis, is invariably the effect of intense inflammation of the mucous and other tissues of the stomach.

The treatment of gastritis, is that proper in cases of inflammation generally, modified, somewhat, by the seat of the disease, and by the age of the patient. Leeches should be applied to the epigastrium, in numbers proportionate to the violence of the symptoms; and if the disease be one of considerable intensity, occurring in a robust and plethoric child, and not too young to permit a vein to be opened in the arm, general blood-letting will be found of advantage. The necessity for a repetition of the leeches, will depend upon the particular character of the attack, and the effects produced by the first application. Should the tenderness and heat of the epigastrium continue, with little abatement, after the first application of leeches, it will be proper to renew them. In general, however, a less number will be required. The leeches should be followed by warm fomentations, or a soft emollient cataplasm, applied over the epigastrium;—the fomentations and cataplasm being renewed at short intervals. The occasional use of pediluvia of warm water, with the addition of a small quantity of mustard, will, in general, be productive of good effects, and should not be neglected.

The diet and drink of the child, should be composed exclusively of some simple mucilage, as gum-water, or water in which the pith of sassafras, or the slippery elm bark has been infused. These should be given cold, and in small portions at a time. The occasional administration of a spoonful of cold water, we have found to be peculiarly grateful to the patient, and often to remain upon the stomach, when every thing else is instantly rejected. It is hardly necessary to say, that if the child is at the breast, it should not be allowed to suck,

so long as the inflammation of the stomach continues.

Great difference of opinion exists, as to the propriety of administering remedies internally, in this disease; some proscribing them entirely, trusting the cure of the inflammation exclusively to external means; while others think it very necessary, to administer, in the early stage of the attack, some mild purgative, especially, if a costive state of the bowels exists. We have been in the habit, immediately after the application of leeches to the epigastrium, or the employment of general bleeding, when this has been indicated and admissible, to administer to the patient, calomel, in small doses, repeated at short intervals—say from the sixth to the half of a grain every one or two hours. This we have known, in a large number of cases, to suspend,

very promptly, the irritability of the stomach, and to produce a favourable change in the symptoms, generally. In cases attended with frequent thin, acid evacuations from the bowels, the calomel has been found to suspend the diarrhea, and render the stools of a more consistent and natural appearance. We generally combine each dose of the calomel, with a grain or two of calcined magnesia, and give it mixed in a little mucilage; but where there exists very great irritability of the stomach, we direct the calomel, combined with a few grains of powdered gum acacia, to be placed dry upon the tongue, the child being shortly afterwards given to drink a spoonful of thin mucilage.

After the inflammation of the stomach is somewhat reduced, a blister to the epigastrium will often be found of essential service: when too early applied, blisters, however, have appeared to us to do more harm than good:—the blister should be kept on only sufficiently long to produce a redness of the skin; it should then be removed, and the epigastrium covered with a common bread and milk poultice. In young children, great inconvenience, and often severe and protracted suffering, have been the result of a blister being allowed to remain on

until vesication occurs.

Inflammation of the stomach, in its most acute form, is often attended with a condition of the pulse and surface, and a degree of extreme prostration, that have induced the inexperienced practitioner to suppose, some remedy adapted to support the strength of the patient, was demanded; in every instance, however, its use will be found to aggravate the symptoms, and hurry on a fatal result. In these cases of extreme prostration, with a cool skin, and small thready pulse, we have repeatedly seen the most beneficial results, from the use of the warm bath, repeated daily—in some instances, night and morning.

The chronic form of gastritis, is to be treated by a mild, unirritating diet, of some farinaceous preparation, with milk—by the warm bath—and blisters to the epigastrium, frequently repeated. In this form of the disease, we have derived great advantage from small doses of calomel, combined with ipecacuanha and extract of hyosciamus.^a If a frequent and troublesome diarrhæa is present, from half a grain to a grain of acetate of lead may be added to each dose.

^aR—Calomel, gr. iij.—iv.

Magnes, cale, gr. xxxvj.

Ipecacuanhæ, gr. ij.—iij.

Ext. hyosciami, gr. iv—vj.—M. f. chart. No. xij.

One to be given every three hours.

In that form of the disease, which is attended with gelatinous softening of the stomach—the occurrence of which, sooner or later, may always be suspected, by the severity of the symptoms, from the very commencement of the attack; the yellowish or greenish matters ejected from the stomach and bowels, the latter particularly, being often extremely acid; the coldness of the extremities; the habitual expres-

sion of suffering which the countenance assumes, and the general state of prostration that early ensues—the most energetic treatment is demanded, from the very onset of the disease. The remedies differ in nothing from those proper in other cases of acute gastritis. The early and judicious detraction of blood, from the arm, or by leeches, to an extent commensurate to the violence of the disease, and the age of the patient, will often promptly abate the intensity of the inflammation, and prevent occurrence of disorganization of the stomach.

It is hardly necessary to say, that the hydrochloride of iron, recommended by Pommer, Hergt, and others, in gelatinous softening of the stomach, is not adapted to the softening from acute gastritis; the cases in which it is reported to have been employed with advantage, were evidently those from defective or disturbed nutrition, unattended

with inflammation.

The utmost care should be taken, in regard to the diet and regimen of the patient, for a long time after recovery from an attack of gastritis, as the disease is one very liable to a relapse, from slight causes, but particularly, from errors in diet. The food should consist chiefly of milk and farinaceous articles, in moderate quantities. Gentle exercise, at first of a passive kind, should be taken daily, when the weather is fine, in the open air. The daily use of the warm bath should not be neglected. The surface should be preserved of a comfortable and equal temperature, by appropriate clothing, and by rooms properly warmed and ventilated, in cold weather, and cooled by the admission of a current of air, and the exclusion of the sun's rays, during the heat of summer.

We have said nothing of the treatment of gastritis from the accidental ingestion of poisonous substances into the stomach, which occasionally happens in infancy and childhood:—with the exception of the administration of such articles as have been found to suspend the action, or to neutralize the poison, the same remedies precisely

are demanded, as in cases of ordinary gastritis.

CHAPTER V.

DISEASES OF THE INTESTINES.

1.—Congenital Malformations.

Congenital malformations of the intestines being of frequent occurrence, and capable of being removed or relieved, in many cases, by an operation, a treatise on the diseases of children would seem to be incomplete without some notice of these affections.

The malformation may consist in the constriction of the calibre of the intestines, at different points—in the closure of the canal, by transverse membranes—in a division of the intestines into separate parts—in the absence of the lower portion of the rectum, and its termination in the vagina in the female, or in the bladder in the male—or in the occlusion of the anus, by a membrane of greater or less thickness.

The first three of these species of malformation, are necessarily and promptly mortal. Neither meconium nor excrement is voided—the milk and other fluids taken, are speedily vomited, followed, in many instances, by the discharge, from the stomach, of a yellowish or dark brown fluid or meconium. Death may occur in a few hours, or not until the termination of several days—the child often becoming

extremely emaciated.

A more frequent species of malformation, is the closure of the anus by a membrane differing in density and thickness. This is readily detected, by the absence of any external opening—the distension of the anus by the meconium accumulated in the rectum; this distension is more apparent when the child cries; at which time, also, a fluctuation can be very readily felt beneath the occluding membrane.

As soon as this malformation is detected, a crucial incision should be made, with a sharp pointed bistoury, through the membrane by which the anus is closed,—care being taken not to divide the sphincter ani, as this may give rise to a troublesome and long continued invol-

untary discharge of the fæces.

Occasionally, the imperforation is situated some distance within the anus, the latter being perfectly formed. Whenever no discharge takes place from the infant's bowels, within a few hours after birth, a careful examination should be made into the state of the rectum; and if the imperforation exists at the lower portion of the rectum, it may generally be detected by the introduction of a gum elastic catheter. The obstruction may, in many cases, be removed by an operation; the nature of which should be, in a great measure, governed by the circumstances of cach case—whether by the trochar and canula, as directed by some, or by the straight pointed bistoury, as directed by others. The greatest caution should be observed in the introduction of the instruments, as well as in the division of the obstructing membrane, lest the sides of the intestine be wounded, or an opening be made into the bladder or vagina.

We have lately seen a case of this species of malformation, in which the obstruction, consisting of a transverse membrane, existed about an inch and a half within the anus, the lower portion of the rectum being, n all respects, perfectly formed. The child lived four days, and, until within a few hours previous to its death, presented no indication of the existence of the obstruction, excepting the absence of all discharges from the bowels. Shortly before death, great tumefaction of the abdomen from the development of gas took place, with evident pain, on pressure of any portion of the abdomen; no operation was permitted by the parents—An examination of the body revealed

the nature of the obstruction—a firm, membranous partition, existing about one and a half inches above the termination of the gut, and forming a complete obstacle to the further passage of the contents of the bowels. The small intestines were perfectly empty, greatly contracted, and free from the least trace of disease; the colon was enormously distended with gas, and, throughout its whole extent, injected with blood; the upper portion of the rectum was likewise greatly distended, and contained nearly eight fluid ounces of meconium and thick ropy mucus; its mucous coat presented very decided marks of inflammation.

Another common malformation of the rectum is a firm adhesion of its sides, often, for many inches above its natural termination, with a total absence of any trace of anus or of sphincter muscle. The skin retains its natural colour over the whole space between the parts of generation and the coccyx, without being elevated, in one place, more than another, and having the same firm, fleshy feel throughout. In such cases, the intestine sometimes terminates in a cul de sac, about an inch above the ordinary situation of the anus, or it may not descend lower than the projection or upper portion of the sacrum; occasionally, it opens into the bladder or vagina. We have seen a case in which the gut, upon reaching the top of the sacrum, suddenly became contracted to the size of one of the ureters, and passed directly to the fundus of the bladder, into which it opened by an orifice that would scarcely admit a large bristle.

In these cases, it has been advised to make an incision, about an inch long, in the situation where the anus ought to have existed; the incision being gradually deepened, in the natural direction of the rectum, by successive strokes of the scalpel, the index finger of the left hand being used as a director. By this means, the end of the rectum may be often reached, and a discharge of the fæces procured; and, by keeping the artificial passage permanently dilated by tents of oiled lint or bougies of a proper size, the life of the child may be preserved. It is seldom, however, that the patient will acquire the power of retaining the fæces, or that the use of the tents can be abandoned, without a contraction of the passage speedily taking place.

If the termination of the rectum cannot be reached by the operation just described, it has been advised—as death must inevitably follow—after the incisions have been carried as far as the finger can reach, to introduce upon the latter a long trochar, in such a direction as will be best calculated for finding the termination of the rectum. We have seen this tried in several cases, but never with any success.

When an outlet for the faces cannot be procured by either of the above means, it has been proposed to make an opening into the abdomen above the pubes, near one of the groins, (Littre, Sabatier,) in the left iliac region, (Duret), or in the lumbar region, between the posterior border and crest of the ilium, parallel with the posterior edge of the quadratus muscle, or perpendicularly, (Callisen, Amussat,) in order to get at the colon, and form an artificial anus, in one or other situation.

Duret is said to have performed the operation in the iliac region, and Amussat in the lumbar region, with success, in several cases.

Cases are related, in which the rectum opened in the urethra, (Roux), or, the rectum being entirely wanting, the colon opening into the neck or summit of the bladder. (Steel, of N. Y., Dubreuilh.) The case of Roux was successfully treated by incisions from the natural position of the anus, in the direction of the rectum.

2.—Enteralgia—Colic.

Intense pain of the bowels is frequently observed in infants; we have already noticed its connection with indigestion, and the means best adapted for its relief, in such cases. Colic, however, occurs during infancy, under circumstances where we have no reason to suspect, as its cause, any disturbance of the digestive function from the bad quality, or undue quantity of the food; we have known it to occur daily, during the first month or two, and nearly at the same period of the day—generally towards the latter part of the afternoon; Dewees remarks that it generally occurs between four and six o'clock, P. M.; while others have noticed its occurrence at a regular period, in the morning or forenoon. In most cases, this species of colie is attended with the formation of gas within the intestines, and occasionally the tumid and tympanitic state of the abdomen is very great. In other cases, however, little or no flatulence is perceptible, the paroxysms of pain occurring at irregular intervals, and being readily induced by the feet becoming cold or wet.

We have not been able to examine the pathological condition of the alimentary canal in cases of enteralgia, never having known death to occur from it. The disease appears, however, to depend upon neuristinia of the intestinal mucous membrane, attended, in most

cases, with a morbid secretion of gas.

In slight attacks of colic, the infant becomes suddenly very fretful, draws up its knees towards the abdomen, and cries for a few minutes, and then resumes its usual quiet state, as though nothing had occurred. These attacks may be repeated at shorter or longer intervals, and seldom cease permanently, or for any length of time, until a portion of gas is discharged by the mouth or per anum, or an evacuation

of fæces, often thin and frothy, occurs.

In more violent attacks, the infant commences, suddenly, to utter sharp, peircing screams, which are often long continued or only interrupted by a few moments of quiet; the knees are forcibly drawn up, or the legs are drawn up and extended in rapid succession; the trunk of the body is occasionally forcibly extended, with the head thrown back, and the hands firmly clenched. The expression of the countenance indicates severe suffering; the face being occasionally flushed, or covered with large drops of perspiration. The abdomen is often distended, tense and tympanitie, or presents an irregular or knotted surface. No

pain is induced by pressure upon any part of the abdomen; gentle pressure and frictions appear, indeed, in most cases, to afford decided relief.

Notwithstanding the severity of the paroxysms, in this form of infantile colic, the child, immediately upon their cessation, is quiet, cheerful, and playful, and exhibits nothing in its appearance, to indicate the severity of its recent sufferings; its appetite is seldom impaired, the digestive and nutritive functions are, in no degree, disturbed or interrupted, and the general health seems, often, actually to improve; as, Dr. Dewees very correctly remarks, some of the fattest and healthiest children are those affected with it. It is a popular nursery opinion, that boys are more subject to this species of colic than girls; but we have not observed it to occur more frequently in one sex, than in the other.

Dr. Parrish has described a species of enteralgia which we have occasionally met with. The child often screams out suddenly, throws itself back, and stiffens its body, as in cases of flatulent colic; the paroxysm ceases, generally, in a few moments, and is succeeded by a state of perfect ease. Even when the pain is less severe, the peculiar motions and complaints of the infant are such, as experienced mothers and nurses immediately attribute to uneasiness in the cavity of the abdomen. Flatulent discharges by the mouth or anus are frequently productive of great relief:—the formation of gas within the intestines, is generally very abundant, producing, often, a tympanitic swelling of the abdomen.

The peculiarity of this variety of enteralgia, consists in its being accompanied by a species of convulsion, resembling an epileptic fit; from this, it differs, however by the patient, immediately on its cessation, becoming quite sensible, and sometimes even playful. Occasionally, two or more of these convulsions will occur in quick succession; and then, days and weeks will elapse before their return. If not arrested, however, they become more frequent and distressing; and at length the infant is almost constantly affected with severe spasms or partial convulsions, and finally sinks under the disease.

This form of enteralgia occurs usually in infants, between five

and twelve months of age. If the child survive the period of dentition, it is usually safe. (*Parrish.*)

In the only case, in which a post-mortem examination was made, the greater portion of the small intestines were found irregularly contracted; being reduced, in some parts, for more than an inch in extent, to the size of a goose quill; in other parts, the calibre of the intestine was almost entirely obliterated, as if it had been tied with a thread. The omentum was folded up in the form of a thick twine or small rope, and lay upon the arch of the colon. The gall bladder was filled with a light-coloured, glairy fluid. No other indication of disease was detected in the cavity of the abdomen or thorax. (Parrish.) The brain unfortunately was not examined.

The peculiar phenomina of the species of enteralgia described by Dr.

Parrish, are evidently the result of the neuropathic condition of the intestines being combined with some degree of cerebral irritation.

The occasional causes of enteralgia are but little understood; a very attentive study of the disease has not enabled us to detect any particular circumstances, under which it is most liable to occur. It may appear at any period, between birth to the termination of the first dentition; we have met with it, more frequently, within the first three or four months. It is very commonly attended with an habitually constipated state of the bowels, and the paroxysms are often excited by allowing the feet to become wet and cold. The disease is not necessarily connected with any degree of inflammation of the alimentary canal, though, in very severe cases, we have known enteritis to become developed at an early period.

Dr. Parrish, who refers the form of enteralgia described by him, to "intestinal spasm," remarks, that "there can be no doubt, that it is

greatly aggravated by difficult dentition."

The treatment of enteralgia may be divided into that proper during the paroxysms, in order to allay the violence of the pain, and that

during the intervals, to prevent their recurrence.

During the paroxysms, the warm bath and warm fomentations to the abdomen are among our most valuable remedies; we have found prompt relief, often to be produced, by applying to the abdomen, after immersion in the warm bath, a cataplasm formed of hops steeped in warm water, and enclosed in a thin gauze bag. The bowels should be opened by an injection of warm water, to which a few grains of assafætida, dissolved in milk, may be advantageously added. Internally we have occasionally administered, with prompt relief, a few grains of aqua camphorata, or of spirits of turpentine, rubbed up with sugar. Three to five drops of spirits of turpentine may be given to an infant, and repeated, every one, two, or three hours, according to the urgency of the case. When, however, the paroxysm is one of uncommon severity, and does not promptly yield to the means that have been enumerated, we have never hesitated to administer an opiate, either by injection or by the mouth, graduating the dose according to the age of the infant, and carefully watching its effects before venturing upon its repetition. We have been much pleased with the effects, in the colic of infants, of a watery infusion of opium:—five grains of opium may be infused, for three hours, in two fluid ounces of water; the infusion being then filtered, ten grains of bicarbonate of soda are to be added; of this, ten drops may be given to a child, within the month, in a little sweetened aniseed water—the same dose being repeated after an hour, if necessary. When the bowels are distended with gas, prompt relief may be occasionally obtained by the introduction, into the rectum, of a large gum elastic catheter, or a common enema syringe.

In the species of enteralgia described by Dr. Parrish, he directs the bowels to be freely evacuated by castor oil, magnesia, or some other gentle cathartic; blood to be taken from the arm, or by leeches to the abdomen; the warm bath, and antispasmodics, particularly the assafætida, given by the mouth, and as an enema. According to the age of the child, from two to five grains may be given, every two hours, in the form of emulsion, and from ten to twenty grains as an enema, repeated more or less frequently, according to circumstances. If the assafætida is not retained upon the stomach; or produces when injected into the rectum, an unpleasant irritation, the rectified oil of amber, two to five drops, rubbed up with gum acacia, loaf sugar, and cinnamon water, may be substituted; if there should be intense pain, a few drops of laudanum may be combined with the assafætida or oil of amber, or four to eight drops of laudanum may be injected into the rectum. The doctor likewise directs frictions along the spine with a liniment composed of oil of amber and laudanum, of each a tea spoonful, and olive oil and brandy, of each a table spoonful; and, in severe cases, a large blister to the abdomen:—the distension of the bowels being, at the same time, relieved, by abstracting the accumulated gas, by means of a syringe introduced per anum.

In the few cases which we have seen of this form of enteralgia, we have succeeded in affording very speedy relief, by the warm bath, followed by warm fomentations to the abdomen, injections composed of assafætida, dissolved in milk, and the administration of a few drops of aqua camphorata, or of spirits of turpentine, in a spoonful of sweetened anisced water. In severe cases, a few leeches behind each of the ears has been invariably found to produce a decidedly beneficial effect. From the evident tendency to cerebral irritation, in these cases, we have been deterred from the use of opium, and have never seen any advantage to result from the application of a blister or any stimulating embrocation to the abdomen. A cataplasm of hops steeped in hot water, or cloths wrung out of warm water, and then sprinkled freely with laudanum, has occasionally been followed with very decided relief. Frictions along the spine, with the oil of amber, as directed above, and the removal of the gas from the bowels by a tube or syringe, introduced into the anus, are unquestionably produc-

tive of good effects.

In the intervals of the paroxysms, of the enteralgia which ordinarily occurs in infants, we really feel at a loss to say what ought to be done to prevent their recurrence:—the child appears to enjoy perfect health; the functions of its organs generally are regularly performed; and in the majority of cases, it is difficult to detect any cause to which the production of the disease can be referred. There is frequently, however, an habitually inert condition of the bowels; this we should endeavour to counteract by a proper regulation of the diet of the mother, which should be composed principally of articles of a laxative character; and the child should be immersed daily in a warm bath, followed by gentle frictions over the abdomen:—the occasional use of laxative enemata will often counteract the inert state of the child's bowels; a very good one is that composed of milk and molasses, with a slight addition of chloride of soda; or a suppository, formed

of the common resinous soap, about one inch long and a quarter of an inch thick, shaped round and slightly tapering to a point, may, after being dipped in water, be passed within the anus. The introduction of a large sized urethra bougie a few inches up the rectum, will generally cause an evacuation, and is attended with less irritation and inconvenience than either injections or suppositories. In some cases of habitual costiveness, frictions over the abdomen, daily, with soap liniment and compound tincture of aloes, has been found very beneficial in procuring a regular state of the bowels.

a R.—Liniment. sapon. comp. 3j.
Tinc. aloe. comp. 3ss.—M. (Merriman.)

We have derived the best effects, as well in counteracting an habitually costive habit in infants, as in preventing the recurrence of paroxysms of colic, from the use of a combination of extract of hyosciamus, ipecacuanha, and magnesia, in small doses.^a

^a R.—Ext. hyosciami, gr. iv. ad viij.
Magnes. calc. gr. xxiv. ad xlviij.
Ipecacuanha, gr. ij. ad iij.—M. f. ch. No. xij.
One to be given, every three hours.

Castor oil, which is usually given to obviate the costiveness of infants and young children, will in most cases be found to increase rather than to remove the inert state of the bowels.

Care should be taken to keep the child's feet dry and warm, by proper clothing, and by changing the stockings or socks the moment they become wet, and thoroughly drying the feet before the fire or by gentle friction with a soft cloth, previous to putting others on.

Dr. Dewees, viewing the disease as one of a strictly periodical character, administered in many cases, a decoction of bark, with the happiest effect; in others, however, no benefit resulted from its use. Dr. Eberle, has seen good effects from the prussate of iron, in combination with powdered valerian—in the proportion of half a grain of the first, to three grains of the latter, for a child between two and three months old—repeated every three or four hours, during the intervals of the paroxysms.

To prevent the recurrence of the spasmodic form of enteralgia, Dr. Parrish, directs a proper regulation of the diet of the child; attention to the state of the gums, which, if inflamed, are to be freely lanced, and the operation repeated, whenever the incisions heal, so long as the continuance of the inflammation may render it adviseable; with blisters behind the ears, kept open by some stimulating dressings; and, if there exists acidity of the stomach and bowels, the frequent administration of some alkaline remedy. Dr. Parrish prefers the alkaline infusion of Physick, diluted to suit the palate of the infant, in doses of a tea spoonful every two or three hours:—we should certainly prefer, in these cases, calcined magnesia, or carbonate of

soda. The following will be found to be a very excellent prescription in most instances.^a

* R.—Mueil, G. Acaciæ, Jiij.
Sacch. Alb. pur. Jiij.
Spir. Terchenth, Jj.
Magnes. calc. gr. vij.—M.
A tea spoonful to be given every three hours.

In every ease of severe colic occurring in children, the symptoms should be carefully scrutinized, and attentively watched; inflammation of the bowels being very apt to occur, which, the moment it is detected, should be met by its appropriate remedies.

3.—Diarrhaa.

Notwithstanding that diarrhœa is one of the common symptoms of inflammation of the alimentary eanal, it, nevertheless, occurs in a large number of cases, from a degree of irritation of the intestinal mucous membrane, which cannot be considered as amounting to inflammatory; it would seem necessary, therefore, to consider it separately, as its treatment differs in many important particulars, from that proper

in the diarrhœa attendent upon enteritis.

In infancy, diarrhæa may be eaused by improper articles of diet, by excess in feeding, by cold and damp, by the irritation of teething, and by excessive heat, combined with an impure and stagnant state of the atmosphere. The excitable condition of the intestinal canal in infants, renders them particularly liable to the occurrence of diarrhæa from slight causes; it is, consequently, an affection of far more frequent occurrence during the early period of life, than at any subsequent age. It may last for only a few hours, and then cease spontaneously, or the evacuations may occur every few minutes, and continue, with little or no abatement, for a considerable length of time, exhausting the strength of the patient, and producing extreme emaciation, without, in many cases, the occurrence of any inflammatory affection of the intestines; in general, however, when diarrhæa assumes a protracted form, it will be found to be dependent upon sub-acute inflammation of the intestinal mucous membrane.

The discharges from the bowels may be more or less thin, of a dirty white or greyish colour, of a curdled appearance, and of a decidedly acid colour, or they may be almost entirely fluid, of a bright yellow or greenish hue, and often mixed with blood—these are the general conditions of the evacuations occurring in early infancy. In older children, they may be thin and feculent, yellow, green or dark brown; or they may consist, at first, of portions of undigested food, very acid, and often, when the diarrhea has resulted from the use of crude and ascescent vegetables, in a state of fermentation. Occasionally the discharges are very thin and watery, without any decided smell, and nearly colourless; or they may be composed of a fluid mixed with bile, of a yellow or green colour. In many cases, particularly during

dentition, the stools consist, almost exclusively, of a thick, jelly like, semi-transparent mucus. In the more prolonged forms of diarrhæa, the discharges are, in general, very thin, small in quantity, of a dark

colour, and extremely offensive.

Diarrhœa in children is usually attended with loss or irregularity of appetite, and often with more or less nausea and vomiting; in many instances, however, the stomach is not in the least degree affected, and the appetite remains unimpaired. Increased thirst commonly attends, and some degree of griping generally precedes and follows each discharge from the bowels. Occasionally there is some degree of flatulence and severe paroxysms of colic. The skin is ordinarily dry, and the countenance pale and languid. abdomen may be swollen when the diarrhea is connected with an overloaded condition of the bowels, or, when a development of gas takes place, but it is seldom tense or tender to the touch, nor is its temperature increased. Whenever pain is excited by moderate pressure upon the abdomen, especially when accompanied by tension and increased heat of its surface, the diarrhoa is dependent upon enteritis, and in such cases there is usually more or less heat of the surface; dryness, with a sense of heat or burning of the palms of the hands, and other symptoms of febrile excitement, with evident exacerbations towards evening. When the diarrhea is prolonged, or assumes a chronic form, the skin becomes dry, harsh and discoloured; great emaciation ensues; the countenance becomes wrinkled, of a dirty yellow or brownish hue, and assumes the appearance of premature old age. The discharges from the bowels are frequent, but small in quantity; occasionally they are suspended for a day or two; they vary in colour and appearance, but are generally very thin and dark coloured, and are often intolerably feetid.

Simple diarrhœa is not often a very troublesome or unmanageable complaint; with the removal of the cause by which it has been produced, it will, in many cases, cease spontaneously, or, may be readily controlled by appropriate remedies. When, however, from any cause it is prolonged, it may produce so great a degree of exhaustion, and so far disturb the nutrition of the system, as to render a permanent cure difficult, and, sooner or later, to cause the death of the patient; or, at an earlier period, an acute or chronic inflammation, or extensive disorganization of the mucous membrane of the intestines may occur,

and a fatal termination rapidly ensue.

Death seldom occurs in cases of simple diarrhea; and, consequently, very few examinations have been made of the pathological condition of the intestines:—in the more prolonged cases, the intestinal mucous membrane, has often presented no marks of disease, with the exception, perhaps, of unusual paleness, and, occasionally, of softening to a greater or less extent. The parieties of the intestines, have, in a few instances, been found of unusual thinness, almost transparent, and easily torn. A contracted state of the tube at different parts, and its distention at others with gas, is a common occurrence. In children

who die whilst labouring under serous or mucous diarrhæa, unattended with symptoms of inflammation, the follicles of the intestines will be found greatly developed, studding the surface of the intestines with small, white projections, or occurring in distinct clusters, or plexes. In most cases of chronic diarrhæa, the mucous membrane is thickened, often softened or ulcerated, and, occasionally, presents large patches of a livid or slate colour; the mucous glands are generally found enlarged, inflamed, or ulcerated, or of a dark, nearly black colour. The mesenteric glands, are often inflamed, enlarged, or indurated. The gall bladder sometimes contains greenish bile, and the liver is occasionally more vascular than natural. (Erunner, Stark, Bang, Andral, Copland.) The most usual seat of the lesions in chronic diarrhæa, are the ilium, especially its lowest third, and the cœcum.

The most common form of diarrhæa in infants and young children, is that resulting from overfeeding, from the bad quality of the mother's or nurse's milk, or from some change produced in it by accidental

causes, or from improper articles of food.

The foundation of diarrhoa is often laid during the first twenty-four hours after birth, by the reprehensible, but too eommon practice, of gorging the infant's stomach with alimentary fluids, often of the worst kind, previous to the secretion of its natural and congenial nourishment. Nurses are always fearful of the infant suffering from the want of nourishment, previous to the appearance of the mother's milk, and, very generally, introduce into its stomach a quantity of food, which cannot fail to produce a degree of irritation, often resulting in an obstinate diarrhoa of some continuance. Ordinarily no kind of nourishment is requisite, until the child can be applied to the breast. Should the secretion of milk, however, not take place for one or two days, as is occasionally the case, a little new milk, with the addition of about one-third warm water, and sweetened with loaf sugar, may be given, and repeated, if necessary.

Infants who are partly nourished by artificial food, as well as those brought up by the hand, are particularly liable to attacks of diarrhoa, often of a very obstinate character. In these eases, the irritation of the alimentary canal is frequently produced, less by the improper character of the food employed, than by the stomach of the infant being habitually overloaded, when it is given to it in too great quan-

tity, or at too short intervals.

The quality of the mother's milk is often the eause of diarrhoa; under the same eireumstances as the breast milk produces indigestion in the child that partakes of it, will it be liable, also, to cause

an attack of diarrhœa.

Mr. E. Wilkinson has observed diarrhea to be produced in infants that are suckled during the period of menstruation; the stools were of a dirty white colour, appearing to consist of a small portion of excrementitious matter dissolved in a large proportion of serous fluid, and of an excessive, almost intolerable fæter, not dissimilar, Mr. Wil-

kinson thinks, to that of the menstrual secretion. We have observed nothing similar to this; the statement of Mr. W. requires further

observations to confirm its accuracy.

There is a curious circumstance in relation to the effects of particular articles of food, upon the stomach and bowels of infants and young children, which should be kept constantly in mind in directing their diet, in every case in which it becomes necessary to allow other food, than the breast milk. It is that some infants are invariably purged by particular kinds of food, which agree perfectly well with others. Arrow root, so generally recommended as an appropriate article of diet for infants, particularly when labouring under bowel complaints, we have so often found to produce purging, that we

have almost entirely ceased from directing it.

The diarrhæa which results, in infants, from improper or too much food, is generally attended with vomiting, the generation of an undue amount of acid in the stomach and intestines, colicky pains, paleness of the face, and general relaxation of the muscles. The discharges are thin, curdled, of a bright yellow or greenish colour, and often decidedly acid. The disorder of the bowels, generally ceases spontaneously in a short time, if the cause by which it has been produced is at once removed; but, if this be continued, the discharges become more frequent, thin, and watery, often intensely green, the functions of the alimentary canal are imperfectly performed, or entirely suspended; the food and drinks taken, pass through the bowels unchanged; great emaciation is produced, and the infant dies, sooner or later, from extreme exhaustion; or an acute, or sub-acute inflammation of the mucous membrane of the intestines is developed, by which the child is more or less promptly destroyed.

The blood which is often mixed with the discharges, in the diarrhæa of young infants, sometimes in considerable quantity, is the result of a true hæmorrhagic effusion, caused by the state of hyperæmia of the intestinal mucous membrane, that is commonly observed for a short

period after birth.

Improper articles of food, or excess in eating, is among the most common causes of diarrhea, subsequent to the period of weaning. Unless the utmost attention is paid to the proper regulation of the infant's diet, for some time after it is taken from the breast, more or less disorder of the bowels invariably results; often an excessive diarrhea occurs, the discharges being at first fæculent, or fæces mixed with imperfectly digested food, but speedily becoming composed of a serous fluid, of a dirty yellow, or greenish yellow. Intestinal inflammation is early developed, or the diarrhea assumes a chronic and peculiarly unmanageable form. It is this diarrhea which is described by Cheyne as a new and peculiar form of diseaes, under the name of "atrophia ablactatorum."

In older children, diarrhoea is generally produced by similar errors in diet. The appetite at this age is keen and very liable to lead to excess in eating, and especially to an indulgence in rich food,

pastry, fruits and confectionary, the inordinate quantities of which devoured by children who are uncontrolled in their diet by those who have the care of them, often produce the most deleterious effects. An occasional excess, may excite no further inconvenience than nausea, vomiting, and a pretty profuse diarrhoa, ceasing spontaneously soon after the offending substances are expelled. But when excess in eating, or improper food is habitually indulged in, a much more serious disorder of the alimentary canal ensues; the diarrhoa then often becomes profuse, and, if not promptly and judiciously treated, inflammation of the bowels is liable to be produced, running, generally, into a chronic form, and producing death from marasmus; or, by exciting disease of the brain, that terminates, most generally, in serous effusion.

The application of cold to the surface of the body, and especially exposure to a cold and damp atmosphere, or a sudden transition from a close and heated, to a chilly and humid atmosphere, will, in many cases, give rise, in children, to a more or less profuse diarrhæa, with mucous or thin watery discharges. These cases are often attended with some degree of febrile excitement, and tenderness and heat of the abdomen, indicating the existence of intestinal inflammation. Slight catarrhal symptoms are frequently present, and, in some cases, the latter precede the diarrhæa; hence the common observation of nurses, that "the cold is working itself off by the bowels." This form of diarrhæa, if its true character is overlooked, and it is, in consequence, improperly treated in its commencement, is very liable to become a serious disease, giving rise to extensive disorganization of the intestines, or early involving the brain.

Some degree of diarrhœa is usually attendant upon the process of dentition; when moderate, its effects are salutary; but, when excessive, or of long continuance, particularly if the infant becomes exhausted, or considerable febrile excitement, with tension, heat and pain of the abdomen occurs, it should not be allowed to go on, but should be promptly arrested by an appropriate course of treatment. In the diarrhœa which occurs during dentition, the discharges are, occasionally, fœcal, of a bright yellow, or green colour, and more or less acid, but more commonly, they consist of thin mucus, often mixed with

a portion of fæces or bile.

It has been very correctly remarked by Billard, that the frequency of these thin mucous discharges about the period of dentition, is in consequence of the rapid development, and increased activity, of the muciparous follicles of the intestines, which takes place about the same time. The degree of irritation communicated to the digestive mucous membrane during the normal development of the teeth, is sufficient, with the existing condition of the muciparous follicles, to cause an undue amount of fluid to be poured into the intestines, which is still further augmented, if the cutting of the teeth be tedious, or attended with difficulty. Although this morbid development, and

activity of the muciparous follicles, is not an inflammatory action, it is, nevertheless, one bordering closely upon it, and hence the propriety of always keeping children affected with mucous diarrhæa at the period of dentition, upon a strict regimen, and closely watching, lest

inflammation suddenly occur.

We have repeatedly seen cases of mucous diarrhæa, occasionally of a very severe and protracted character, ensue, upon the sudden disappearance of cutaneous eruptions, or the drying up of the discharge from ulceration behind the ears. These cases appeared to be, in the majority of instances, accompanied with some degree of inflammation of the intestinal mucous membrane. Mucous discharges are often

accompanied with the presence of intestinal worms.

Atmospheric heat, particularly when combined with the influence of a confined and impure atmosphere, is a common cause of diarrhæa. During the summer months, in our large cities, few children escape a slight attack; and among the children of those who inhabit the confined houses, situated in narrow, ill ventilated courts, lanes and alleys, the disease prevails in a form of uncommon severity. It is of less frequent occurrence in high, elevated, and healthy situations in the country, but occasionally prevails to a considerable extent, in low, marshy, or, what are usually termed miasmatic districts.

The discharges are, at first, fæculent, but soon become almost exclusively composed of a thin mucus, mixed with bile, of a bright yellow, or green colour; they are extremely copious, and are generally attended with nausea, often with bilious vomiting, and more or less griping. This latter symptom is, however, absent in a large number of cases; the discharges taking place as it were involuntarily. In slight cases, occurring in children properly nursed, and resident in comparatively healthy localities, the disease often ceases, in a short time, spontaneously. In those who are exposed to the constant influence of a heated and confined atmosphere, the diarrhea will continue, with occasional temporary cessations, for many days; the urine becoming tinged with bile, and the skin and whites of the eyes of a yellowish hue; or the discharges from the bowels are often attended with a sense of heat or scalding, and it is not uncommon for an excoriation of the anus to take place. The symptoms of cholera infantum may quickly develope themselves, or, after a few days, and sometimes earlier, the bilious discharges may cease, and frequent copious evacuations occur, of a serous fluid, at first of a yellowish or greenish colour, but, subsequently, almost colourless; at the same time, not unfrequently, the abdomen becomes tense, hot, and painful upon pressure; the skin dry and harsh; the tongue red at the tip and edges, and covered on its surface with a dirty white or yellowish mucus; great thirst is experienced, and, whatever fluid is taken, is instantly expelled, and often with great violence; apthæ often appear upon the parieties of the mouth, and rapid emaciation ensues. The brain is, in some cases, early affected, and the patient expires, with all the symptoms of hydrocephalus; in other cases, the diarrhæa assumes a chronic form, and the child, after becoming reduced, literally to "skin and bones," and to a state of extreme

exhaustion, expires apparently from inanition.

The bilious diarrhoa of hot seasons, in its simplest form, appears to be produced by an excessive secretion of bile, the result of the excessive stimulation of the skin by atmospheric heat, but in the more violent cases, the presence of acute inflammation of the mucous membrane of the stomach, and upper portion of the intestinal tube, or of the lower portion of the small intestines, is indicated as well by the symptoms during life, as by the pathological changes detected after death. We have frequently detected in our autopsics, increased redness of the stomach and duodenum, occurring in points grouped together, in large patches, or irregularly diffused, and presenting a kind of elevation from the thickening of the mucous membrane, or in irregular striæ. Follicular inflammation was occasionally detected in the stomach, but more frequently in the ilium. Distinct ulcerations and softening of the mucous membrane, were of common occurrence. In repeated instances, the follicles of the intestines were considerably enlarged, without appearing to be inflammed. Contractions of different parts of the intestinal tube, were frequently observed, and, in few instances, numerous invaginations. The small intestines were generally empty, while the mucous coat of the large intestines, was frequently coated with a thick tenaceous mucus, and often contained a frothy mucus, of a greyish or yellowish colour. The liver was usually in a state of hyperæmia, and the gall bladder, contained more or less thin and very light yellow or greenish bile. The marks of inflammation were, however, in a number of instances, particularly when the disease had assumed a somewhat protracted or chronic form, by no means of so decided a character; and, in a few cases, the only indications of disease, were unusual paleness of the mucous membrane, with enlargement of the muciparous follicles.

The discharges, in some cases of diarrhea, are of a very white, opaque appearance, having some resemblance to a mixture of chalk and water. This constitutes the chylous diarrhea of many authors; chyle, however, never being present in the intestines, could scarcely be expelled by stool, especially in quantities sufficient to account for the copious, white, milk-like evacuations we often observe to take place; neither do the physical appearances of the discharges bear any resemblance to those of chyle. It has appeared to us to be merely a variety of the mucous diarrhea of infants, the peculiar condition of the stools arising, probably, from some morbid change in the intestinal secretions. Some have supposed it to depend upon irritation, with altered secretion of the pancreatic gland. We have had no opportunity of observing the condition of the alimentary canal and other abdominal organs in this form of diarrhea, never having met with it in any case that terminated fatally; it is one, indeed, judging from our own experience, of very unfrequent occurrence in this country.

From the preceding description of the several species of diarrhoa

occurring in infants, it will be perceived how intimately all of them are connected with intestinal inflammation of an acute, sub-acute, or chronic character; it is true, as already remarked, that, in its commencement, diarrhœa may be the result simply of an increased peristaltic action of the intestines, with augmented secretion from the mucous membrane, and from the liver, without the slightest indication of inflammatory action; it may even continue for a long period, and produce the death of the patient by suspending the assimilative and nutritive functions, and still no indications of inflammation be present throughout the attack; but it must be still kept steadily in mind, that not unfrequently the diarrhæa may be dependent upon inflammation of the intestines, from its very commencement, and that there is a tendency to the development of inflammation of a more or less acute form, in every case unless the cause of the diarrhæa be early removed, and it be, in this manner promptly suspended; under whatever circumstance, therefore, diarrhæa occurs, a close scrutiny into, and careful analysis of all the accompanying symptoms, should be made, and if the case be a protracted or obstinate one, the state of the abdomen as to tension, heat, and tenderness upon pressure, should be cautiously examined; and if intestinal inflammation be detected, its removal by a judicious course of treatment, is essential to the cure of the diarrhæa, and to secure the safety of the patient.

In the treatment of every form of diarrhæa, the first and most important indication is, to remove the cause by which it has been produced. In that caused by improper food, or excessive feeding, the aliment should be at once improved in quality, or reduced in quantity. If the mother's milk be in fault, that of a healthy nurse should be substituted; or, if this be impracticable, the child may be nourished upon diluted milk, with the addition of the best loaf sugar, by means of the sucking-bottle. If the child be fed by the hand, provided the breast of the mother does not afford a sufficient supply of nourishment, the additional aliment should be the same as directed above; taking care that the child be not allowed to overload its stomach, by taking too much at a time, or being fed with it at too

short intervals.

When diarrhea occurs at the period of weaning, the utmost attention should be paid to the food of the patient, agreeably to the directions given in our chapter on the diet of infants; care being taken at the same time, to observe the effects of any particular article of diet, which, though in itself perfectly wholesome, may, from some peculiar idiosyncrasy in the child, disagree with its stomach, and cause more or less purging; whenever this is found to be the case, its use should at once be relinquished, and another kind of food substituted. We have known infants in whom, immediately after weaning, the bowels were disordered by all the ordinary farinaceous preparations, and by milk, but with whom meat broths, with the addition of rice or crackers, agreed perfectly well.

In older children it will be proper, upon the occurrence of diarrhæa,

to suspend every species of solid nourishment, and confine them entirely, for a short period, to moderate quantities of some preparation of rice with milk; to water gruel, or to crackers and milk. Fruits of every kind—pastry, confectionary, sweetmeats—and every species of fresh vegetables, should be entirely prohibited.

For drink, cold water, or cold toast, rice, or gum water, may be

given in small quantities at a time.

The proper regulation of the diet, with the use of the warm or tepid bath daily, and gentle exercise in the open air, will, in a large number of cases, be all that is necessary for the cure of this form of diarrhæa; and without such regulation of diet is carried strictly into effect,—and in so doing, the physician will find himself constantly opposed by the prejudices and inattention of parents and nurses,—it is in vain to attempt its removal by the administration of medicine.

The exhibition of two or three doses of some mild but active purgative, is commonly directed to remove any irritating matters that may be retained in the alimentary canal, and by some writers it is even advised that an emetic should be administered for the same object. (Underwood, Burns, Dewees, Eberle, Marley, Evanson.) We believe that in very few instances, diarrhea will be found to be kept up by the retention of irritating substances in the intestines; it is very certain, that in the majority of cases, the use of active purgatives is not only unnecessary, but positively injurious, by increasing and prolonging the irritation by which the disordered action of the bowels is produced. If the diarrhea is not quickly suspended by a proper regulation of the infant's diet, and the use of the warm bath—particularly if the stools are attended with griping—we have found a dose or two of a combination of calomel, prepared chalk, ipecacuanha, and extract of hyosciamus, to be attended with the best effects.

R.—Calomel, gr. ij. ad vj.
Cretæ, ppt. gr. xviij.
Ipecaeuanhæ pulv. gr. ij.
Extract. Hyosciami, gr. iij. ad vj.—M. f. chart. No. vj.
One to be repeated every two, three, or four hours, according to circumstances.

Under the use of this combination, we have generally found that the stools become less frequent, more natural, and of greater consistency; the digestion improved, and the irritability of the intestines diminished.

It sometimes happens in cases of simple diarrhea from errors in diet, that a large amount of acid is generated in the stomach, which appears to keep up the discharges from the bowels; when this occurs, a few grains of carbonate of soda in solution; a teaspoonful or two according to the age of the child, of the aqua calcis, combined with an equal portion of new milk, or a few grains of prepared chalk, combined with a quarter to a third of a grain of ipecacuanha, and the half of a grain to a grain of extract of hyosciamus, may be given twice or thrice a-day; with some light astringent every three hours.

The tincture of kino, or catechu, or either of these substances in powder, or the compound infusion of catechu, may be given.

a R.—Catechu. pulv. Jij.
Cinnamon. contus. Jss.
Aq. bullient. Jv.

Macerate for an hour in a closely covered vessel, and strain.

Dosc.—A teaspoonful every two three or four hours, according to the age of the patient, or the nature of the case.

With many American physicians, we prefer, as an astringent, in cases of simple diarrhæa, a decoction of the root of the geranium maculatum, or of the blackberry, (rubus villosus,) especially the former, which, when the decoction is made with milk, is a very excellent and agreeable astringent, well adapted to relieve the irritable state of the bowels, by which in many cases of ordinary diarrhæa, the disease is liable to be kept up after the original cause has been removed.

The opiates generally recommended in this form of diarrhea, are seldom, if ever, required; if in consequence of the sleep being disturbed by frequent evacuations occurring during the night-time, an opiate is indicated, an injection composed of thin starch and a few drops of laudanum, or a small portion of opium, combined with ipecacuanha, and carbonate of sodæ, may be given in the evening. But it is better, if possible, to dispense altogether with the use of opiates in

every form.

aR.—Opii pulv. gr. j. Ipceae, pulv. gr. iij. ad iv. Carb. Sodæ, 9j.—M. f. ch. No. xij.

For a chi'd over one year of age, the proportion of opium may be somewhat increased.

The treatment of mild cases of mucous or serous diarrhæa, will consist, principally, in the substitution of mild mucilaginous fluids, as rice water, gum water, or an infusion of slippery elm bark, for the ordinary food and drink of the patient: in the use of the warm bath morning and evening, and the exhibition of a combination of ipecacuanha and calomel, every two or three hours; and as soon as the discharges have become less frequent, and of a natural appearance, the administration of some light astringent, as directed above. It is all important, that every species of solid food be abstained from, in cases in which the diarrhoa is attended with thin mucous or serous discharges; even the mother's milk will, sometimes, be found to irritate the bowels, and increase the disease. Hence it is better to confine the patient always to simple mucilaginous fluids. As the disease arises in most cases from the effects of cold and dampness, the warm bath will be found an admirable remedy, particularly if followed by gentle frictions over the abdomen and surface of the body generally. The common practice of administering frequent doses of castor oil in mucous diarrhœa, is one calculated to increase the irritation of the intestines, and in this manner render the disease more protracted and difficult to manage.

*R.—Calomel, gr. j. ad ij.
Ipecacuanhæ, gr. ij. ad iij.
Sacch. alb. Эij.—M. f. ch. No. xij.
One to be given every two or three hours, according to the age of the child.

When the discharges from the bowels are very profuse, and consist, principally, of a thin, often nearly colourless, scrous fluid, the use of small doses of calomel, ipecacuanha, acetate of lead, and extract of hyosciamus, will be found promptly to arrest them. Ample experience has taught us, that the acetate of lead may be given with the most perfect safety to children; in the combination just stated, we know of no more effectual means of arresting the profuse serous discharges which often occur in the diarrhea of infancy, which, if allowed to continue, produce, in a very short time, a degree of exhaustion, that is, not unfrequently, fatal.

Ipecacuanhæ, gr. ij. ad iij.
Acetat. plumbi. gr. vj. ad xij.
Ext. Hyosciami, gr. iv. ad viij.—M. f. ch. No. xij.
One to be given every two or three hours. The proportion of the several ingredients and the frequency of repetition being regulated by the age of the patient.

aR.—Calomel, gr. j. ad ij.

In every case of mucous diarrhæa, the liability to the development of intestinal inflammation should be kept constantly in mind; and the moment that tension, heat, and tenderness of the abdomen are detected, or distinct febrile excitement occurs, it will be proper to apply leeches to the abdomen, in numbers proportioned to the age of the patient, and the urgency of the symptoms; followed by warm fomentations, or an emollient cataplasm. As soon as the inflammatory action is subdued, if the discharges from the bowels still continue to be frequent, and of a serous character, the combination of acetate of lead, directed above, may be advantageously administered.

In some cases, mucous diarrhea assumes a kind of chronic form, the discharges being frequent, small in quantity, and attended with a good deal of straining. They consist, chiefly, of a transparent, occasionally, jelly-like mucus, sometimes perfectly white, at others, of a dirty yellow, greyish, or green colour. The bowels are occasionally distended with gas, but the abdomen is seldom painful to the touch, or exhibits any increase of temperature. There is, generally, great emaciation, and sometimes, diminished temperature of the surface of the body, or of the extremities. In these cases, we have found the calomel and ipecacuanha, as directed above, to produce an excellent effect; mucilaginous injections, with a suitable addition of opium, or the combination of opium, ipecacuanha, and soda, noticed under the head of simple diarrhea, will be required, to relieve the straining, frequently attendant upon the discharges. Dr. Eberle recommends in this chronic form of the disease, from five to ten drops of balsam copaiba, in the form of emulsion, with the addition of a few drops of tincture of opium, or given in conjunction with minute portions of Dover's powder; we have likewise administered the copaiba in many

cases, and have often witnessed the best effects from its use. The form in which we have generally given it is as follows:

*R.—Bals. Copaibæ, Jj.
Magnes. cale. gr. x.
Spir. æther. nitr. Jiij.
Sacch. alb. Jiij.
Ag. cinnamon. Jiii.—M

Sacch. alb. Jiij.

Aq. cinnamon, Jiij.—M.

Dosc.—One teaspoonful every two or three hours: each dose to be followed in the course of an hour by the fourth of a grain of Dover's powder.

The frequent repetition of the warm bath will be found advantageous in these cases:—the abdomen should be kept covered constantly with a broad flannel roller:—blisters to the abdomen have been recommended; we have seldom, however, seen much advantage from their use. The diet in this chronic form of the disease, should consist chiefly, of very thin preparations of rice flour or tapioca, with milk and a small quantity of loaf sugar; in some instances, these will be found to disagree with the patient, when probably, simple chicken water, with or without rice, may be advantageously substituted.

When mucous diarrhea proceeds from the sudden disappearance of cutaneous cruptions, or from the drying up of discharges from behind the ears, the treatment is the same as directed above; we have never seen any good effects from attempts to renew by stimulating applications, the irritation of the skin, or the ulceration behind the

cars.

When diarrhæa occurs during the process of dentition, it is, occasionally, merely fæcal, but more frequently mucous, or serous; when moderate, and occurring in children of a robust and plethoric habit, a careful regulation of the diet—which should be restricted to preparations of the farinacea with milk—cool mucilaginous drinks, the warm bath, and attention to the gums—the protrusion of the teeth, if tardy, particularly if the gum covering them is hard, tense, and swollen, being promoted by incisions—are the only means required. No attempt should be made to arrest the discharges, so long as they continue moderate in quantity, and unattended by any unusual symptom. When, however, the discharges are profuse, emaciation ensues, or symptoms of intestinal inflammation present themselves, the diarrhæa demands immediate attention; it should then be treated in the same manner as though it had occurred independently of dentition.

The mucous diarrhea so frequent in cases of intestinal worms, has generally been ascribed to the irritation produced by the presence of the latter. How far this opinion is correct it is somewhat difficult to determine. Of the existence of worms in the intestines, we have no positive evidence, excepting that derived from their appearance in the discharges. A superabundance of viscid mucus in the bowels, and its copious discharge by stool, being generally enumerated as leading indications of their presence, the latter is often inferred, merely from the fact, that a child is affected with mucous

diarrhea, particularly in its chronic form:—we have, it is true, in numerous instances where worms have been discharged in great numbers from the intestines, observed the children to labour under a species of diarrhea, attended with stools rather more frequent than usual, and composed entirely of a mass of thick, tenacious, diaphanous mucus, which appeared to come away at once, without straining, or any unusual effort. These discharges frequently alternate with regular, healthy stools, or those composed, in a great measure, They are always unattended with febrile exof natural fæces. The children citement, or the slightest indication of inflammation. are generally pale, of a lymphatic temperament, with capricious appetites, and tumid, but soft abdomens. Their breath has, generally, a sickly, diagreeable odour. Their tongue is coated with a thin layer of slimy mucus. Their urinary discharge is copious, and light coloured; and in many cases, more or less ædema of the feet, and about the eye-lids occurs. We have generally succeeded in restoring the natural condition of the stools, and removing the principal symptoms of the disease, by the administration of turpentine in emulsion, followed by light astringents, the use of the warm bath daily, and a careful regulation of the diet and regimen.

R. Mucil. G. acaciæ. Ziij,
Sacch. alb. pur. Zvj.
Spir. æther. nitr. Ziij,
Spir. terebenth. Zij,
Magnes, cale. gr. xiij,
Lavend. spir. comp. Zij,—M.

Lavend. spir. comp. 3ij.—M.

Dose, a tea spoonful repeated three times a day, or oftener, when the child is ever two
years of age.

When ordinary mucous diarrhea occurs in a child suspected to have worms, and especially when it assumes an acute form, it should be treated by the means proper in that form of the disease, without reference to the presence of worms in the intestines:—the remedies usually employed for the destruction and expulsion of the latter would be calculated to increase the diarrhea, or even to induce severe inflammation of the intestinal mucous membrane.

In the treatment of bilious diarrhea, the first indication is to remove the cause by which the morbid secretion of bile has been produced. As this is usually intense heat, with a stagnant and impure state of the atmosphere, the prompt removal of the child to a cooler, more free, and cooler atmosphere is essential to ensure its recovery; when such a removal cannot be effected, domestic cleanliness and free ventilation should be enforced, as well as the free exposure of the child, in dry weather, to the external air, in the most healthy and open situations, in its immediate neighbourhood; it being either carried out in the arms, in an open hand carriage, or by riding in any open vehicle, or sailing in an open boat, properly shaded from the sun, or in one of the steamboats, which, in most of our large cities, make repeated short trips, in the course of the day.

The diet and drinks of the patient should consist exclusively of gum water, rice water, or infusion of slippery elm bark—taken cold, and in small quantities at a time, but at short intervals. It should be immersed daily in a tepid or warm bath, according as the temperature of its surface is augmented or depressed, and its clothing should be light and loose, and adapted, in the materials of which it is composed, so as not unduly to augment the heat of the body, but to guard it from

the effects of sudden transitions of temperature.

This treatment will be sufficient, in a large number of cases, in which the disease consists simply in an undue secretion of bile, to arrest the diarrhæa, and restore the discharges to their natural condition. If, however, these still continue with little or no abatement, and neither fever nor intestinal inflammation exists, small doses of calomel, ealeined magnesia, ipecacuanha, and extract of hyoseiamus, will generally produce the desired effect. Under the use of this combination, the discharges will generally assume, in a short time, a fæcal character, and be diminished in quantity. If there exists irritability of stomach or vomiting, the ealomel should be given alone.

R.—Calomel. gr. ij. ad iij.
Magnesiæ cale. gr. xxiv. ad xxxvj.
Ipecacuanhæ, gr. ij. ad iij.
Ext. hyosciami, gr. iv. ad viij.—M. f. ch. No. xij.
One to be given every two or three hours.

Purgatives, opiates, and astringents are seldom proper—never, unless the disease assumes a chronic form, unattended with inflamma-

tion.

When the discharges lose their bilious character, and become thin and serous, if no tension, pain, or heat of the abdomen, is observed, the acetate of lead, in the formula directed when speaking of the treatment of mueous diarrhæa, is the remedy which we have found the most frequently to succeed in arresting the disease. When the discharges are profuse, and the patient becomes rapidly exhausted, a small portion of opium may be substituted for the extract of hyosciamus; and a solution of the acetate of lead, with the addition of laudanum, adapted to the age and condition of the patient, may be thrown into the rectum. As soon as the profuse, serous discharges are suspended, the ealomel in small doses, combined with ipeeaeuanha and extract of hyosciamus, will, in general, complete the cure; or, if after the discharges assume a more natural appearance, they still continue thin and frequent, some of the astringents already mentioned, as the cateehu, the geranium maculatum, or kino, will be proper, with a dose of the Dover's powder at night.

This form of diarrhea occasionally assumes a chronic character, when the treatment will be the same, as in the chronic stage of cholera infantum. In many cases, it is probable that the following prescription will be found advantageous:—it is recommended, by Evanson, as

one of the most useful compounds in protracted cases of diarrhea. We have ourselves never employed it, but have seen good effects result from the administration, in these cases, of nitrous acid, in combination with aqua camphorata and opium, or with hyosciamus.

a R.—Infusi samaroubæ, Ijss. Acidi nitrici dil. M ij. ad iv. Syrupi caryophyl. Jiv. Tinc. opii, M vj.—M.

One or two teaspoonfuls, in a little barley water, to be repeated, three or four times a day.

b R.—Acid. nitros. M viij. ad xv.
Aquæ camphor. Zj.
Tinc. opii, M vj.—M.
A tca spoonful, every three hours.

Or, R.—Acid nitros. III x. ad xv. Saech. alb. Ziij. · · Ext. hyosciami, gr. xvj. Aq. cinnamon. Zj.—M. Dose, the same.

As we have already remarked, in a large number of cases, bilious diarrhea is accompanied with evident symptoms of intestinal inflammation. In this form of the decease, the safety of the patient, as well as the cure of the diarrhea, will depend upon a correct diagnosis being early made, and the appropriate remedies for the control of the inflammation promptly resorted to—plain mucilaginous drinks leeches to the epigastrium, followed by warm fomentations, or an emollient cataplasm, and warm sinapised pediluvia. When extreme irritability of the stomach or vomiting is present, we are in the habit of administering minute doses of calomel; placing them upon the tongue in a dry form, if they are quickly ejected from the stomach, when given in the usual manner; from an eighth to a sixth of a grain may be given, every half hour or every hour, according to circumstances; we have seldom been disappointed in quieting the stomach by this means, in a few hours. After the inflammatory symptoms are subdued, the case may be treated as an ordinary attack of bilious diarrhæa; a careful watch being, however, kept upon the symptoms, lest intestinal inflammation be renewed; should this happen, the propriety of a reapplication of leeches will depend upon the strength of the patient, and the violence of the symptoms. It is probable that, in most cases, a blister over the abdomen will be sufficient to remove the inflammation, without again resorting to leeches; even when the latter are considered necessary and proper, they should be followed, in a short time, by a blister, left on only so long as to produce decided redness of the skin, the part to which it has been applied, being then covered with a common bread and milk poultice. During the continuance of the diarrhæa, the utmost attention should be paid to the diet and regimen of the patient; the slightest error or neglect, in this respect, being always attended with very serious consequences.

By many physicians, the exhibition of opiates has been strongly advocated, in the inflammatory form of bilious diarrhea; we have occasionally resorted to them, but have never been pleased with their effects; in some instances they were decidedly injurious. After the

inflammatory action has been somewhat reduced by leeching, a combination of calomel, extract of hyosciamus, and ipecacuanha, in small doses, from a fourth to a half a grain of the first two, and from a sixth to a third of a grain of the last, repeated every three hours, will be found, in many cases, to produce a very favourable change in the symptoms of the disease.

It is not very easy to lay down the proper treatment of chronic diarrhæa, without a reference to the condition of the mucous membrane of the alimentary canal, the state of the liver, and of the other organs that may become involved in disease, in different cases. In many cases of prolonged diarrhæa, no other morbid condition of the intestines would appear to be present than an undue irritability of their mucous membrane, with increased exhalation from its follicles; here the cure of the disease is readily effected by a judicious course of astringent remedies, in conjunction with a well regulated diet and regimen:—but much more frequently, the diarrhæa is kept up by chronic inflammation of the alimentary canal, and a diseased condition of the liver, with a vitiated state of the bile as well as of the other secretions poured into the intestines. The management of these cases is attended with great difficulty, and the best directed plan of treatment

is very frequently unsuccessful.

The discharges in chronic diarrhoa may be composed of a thick, tenacious, jelly-like mucous of a dark green, chocolate or black colour, or of a thick, tenacious matter, resembling tar. In other cases, they have the appearance of light clay or thin mortar; while in others they are composed of a thin fluid of a dirty green, reddish brown, or yellowish colour, and in some instances, they consist of the food or drinks taken which pass immediately through the bowels without having undergone the least change. The stools have often a peculiar rancid odour, but are generally more or less fætid. The discharges are not generally large in quantity, and vary very much, in regard to frequency—a number often taking place in quick succession, and then a considerable interval occurring before they again occur; more or less griping may proceed and accompany the discharges, though, in many cases, the patient appears to suffer no pain. The abdomen is generally swollen, particularly in cases of long continuance, and when enlargement of the mesenteric glands occurs:—occasionally extreme tympanitic distension takes place at an early period. There is always great emaciation, with dryness and harshness of the surface—discolouration of the skin, which acquires, in severe cases, a dark brown hue; the features are shrivelled, and the countenance assumes the wrinkled, haggard look of premature old age. patient, finally, sinks from extreme exhaustion—from perforation of the intestines, the result of softening or inflammation,—or the brain may become affected, and effusion within its cavities take place, sooner or

Chronic diarrhea is generally the result of neglect or mismanagement of the ordinary forms of the disease, or it may be produced by a

continuance of the causes by which the diarrhæa was originally produced, or by its repeated recurrence, in the same child, within a short period of time. In the great majority of cases, it may be referred to a neglect of dietetic management, or to a recurrence to the use of improper food, immediately after recovery from an attack of ordinary diarrhæa. For a long time, after the bowels have resumed their natural action, strict attention to the diet of the child is essential to prevent a relapse; even indulgence in articles which, under other circumstances, would be considered perfectly wholesome and appropriate, will not unfrequently produce a return of the diarrhæa, and each return of the disease will be found to be more unmanageable than the

preceding, and more liable to assume a chronic form.

In the treatment of chronic diarrhæa, the child should be confined entirely to some plain, farinaceous article of food, with or without milk, according as the latter is found to affect the stomach and bowels. Rice, or rice flour, with milk, we have found, in most cases, to agree best with children labouring under the chronic form of the disease—though occasionally even this will aggravate it; beef tea or plain chicken water may, then, be tried, or a mixture of fresh cow's milk, with a further addition of cream. In some instances, we have found that no diet could be taken by the patient, without increasing the disorder of the bowels, excepting gum water, fresh rennet whey, or infusion of the slippery elm bark. For drink, gum, rice, or toast water, taken cold, should be the only fluids allowed. In all cases of chronic diarrhæa, the warm bath forms an important remedy; it may be repeated daily, and in many cases, morning and evening, with decided advantage.

In those cases in which the discharges indicate a disordered state of the biliary secretion, small doses of calomel should be administered twice or thrice a day, or oftener, according to the circumstances of the case, and the effects produced by the remedy. Some are in the habit of administering the calomel by itself, (Clarke, Cheyne, Underwood, Marley,) while others combine it with prepared chalk and opium, (Dewees,) or with opium alone, (Eber'e, Seele, Jäger.) We prefer its administration, in combination with prepared chalk, ipe-

cacuanha, and extract of hyosciamus.2

* R.—Calomel. gr. ij. ad vj.
Cretæ. ppt. gr. xxxvj.
Ipccacuanhæ, gr. ij. ad iv.
Ext. Hyosciami. gr. iv. ad viij.—M. f. ch. No. xij.

The use of this combination should be continued until the discharges assume a more natural appearance. In many cases, we have experienced the best effects from the employment of turpentine, in the following formula. Under its use, we have found the discharges to be speedily reduced in frequency, and improved in appearance. So far from augmenting the irritation of the mucous membrane of the intestines, even when this has been the seat of a sub-acute inflammation, we have found it to produce a directly soothing influence.

*R.—Mucil. G. acaciæ. Giij, Sacch. alb. pur. Giij. Spir. tcrebenth. Gij. Magnes. calc. gr. xiij. Tinc. opii camph. Gij.—M.

Dose, a tea spoonful, every three or four hours, according to circumstances.

When there is much tenderness of the abdomen, and the child evinces the existence of pain by its fretfulness or almost constant whining cry, or by drawing up its knees towards the abdomen when lying; more especially, if there is redness and dryness of the tongue, and an occasional circumscribed flush of one or both cheeks, with a suffering expression of countenance, it will often be found advantageous to apply a few leeches to the abdomen, and upon their removal to cover this part with a large emollient cataplasm. After a few hours, the leeches may be followed by a blister, which, when properly managed, according to the directions already given, very generally produces a very beneficial effect. In all cases of chronic diarrhæa, the derivative effects of blisters to the abdomen are advantageous, often very decidedly so, and in many cases, the blister may be repeated as soon as the first heals. When acidity prevails in the alimentary canal, the occasional use of some alkaline preparation will be proper; a few grains of bicarbonate of soda, or a few drops of aqua ammonia, may be given in a weak infusion of hops, or we may employ the prepared chalk.

* R.—Cretæ ppt. 3j.
Calomel. gr. iij.
Ipecacuanhæ, gr. iij.
Ext. hyosciami, gr. viij.—M.
f. chart. No. xij.
One to be given, three times a day.

Or, R.—Cretæ ppt. Ijj.
Sacch. alb. pur. Ijj.
Mucil. G. acaciæ. Iss.
Aq. cinnanon. Ijj.
Tinc. opii camph. Ij.—M.
A tea spoonful, to be given, every three or
four hours.

When the acidity is accompanied with much flatulency, we have found the turpentine, in the formula given above, to produce the most prompt and effectual relief. In cases of extreme tympanitis, we may succeed, in many cases, in drawing off the gas from the intestines, by the introduction of an elastic tube into the anus, or by the use of the syringe, as noticed in the section on enteralgia.

When the patient's sleep is disturbed and restless, or frequent evacuations from the bowels occur at night, a dose of Dover's powder,

or an anodyne enema may be given in the evening.

As soon as the inflammatory symptoms are removed, and the discharges assume a more healthy appearance, the exhibition of some astringent may be ventured upon. The one which, in our hands, has succeeded in the greatest number of cases, is the acetate of lead, combined with ipecacuanha and opium.^a The acetate of lead, as we have already remarked, may be given to children, without fear of any injurious consequences resulting, provided care be taken to procure the article perfectly pure, and not to administer, in conjunction with it, any thing calculated to cause its decomposition.

^a R.—Acetat. plumbi, gr. vj. ad xij. Pulv. ipecacuanhæ, gr. iij. Opii pulv. gr. j.—M. f. ch. No. xij. One to be repeated, three times a day, or oftener, if required.

Next to the acetate of lead, the best astringent, according to our experience, in the chronic diarrhæa of children, is the galls in powder. It may be given, in the dose of from three to five grains, three times a day, in combination with a small portion of camphor.^a

R.—Pulv. Gallæ, gr. xxxvj. ad Jj.
Camphor, pulv. gr. iij —iv.
Saech. alb. gr. xxv.—M. f. ch. No. xij.

A great variety of other astringents have been recommended, as the kino, catechu, and the blackberry and geranium roots. The persesquinitrate of iron, which is spoken of in the highest terms, as a remedy, in certain forms of chronic diarrhea in adults, (Kerr, Kopp, Graves,) appears to us well deserving of a trial, in the cases occurring in children, which often bear a strong resemblance to those described in the clinical lectures of Dr. Graves. Two to three drops of the liq. ferri persesquinitratis may be given, every three hours, in sugar and water; the dose being gradually augmented.

In the use of astringents in chronic diarrhæa, we shall be constantly disappointed in obtaining any permanent good effects, if they be entered upon previously to a change being procured in the appearance of the discharges; so long as these continue of a decidedly unhealthy appearance, to attempt to suspend the morbid irritability of the intestinal canal by opiate or astringent remedies, is merely to pro-

long the disease.

In those cases, however, in which the evacuations are, in a great measure, composed of thin, fœcal matter, or of serum, tinged with bile, the combination of acetate of lead, ipecacuanha, and opium, may be commenced with at once. It is in such cases we suspect, that the most advantage will be derived, from the combination of nitric acid, with the infusion of samarouba, and from the persesquinitrate of iron.

During the continuance of the disease, daily exercise in the open air, when the weather will permit, to an extent adapted to the strength

of the patient, with proper clothing, should not be neglected.

The state of the brain must be carefully and closely watched. If any degree of cerebral irritation is detected, leeches should be applied to the temples, blisters behind the ears or to the nape of the neck, and warm, sinapised pediluvia repeated night and morning; the diarrhea being treated by calomel, ipecacuanha, and extract of hyociamus. We are to recollect, however, that stupor, and other symptums of an affection of the brain, terminating rapidly in effusion, may be produced by extreme exhaustion, the result of the frequent and profuse evacuations from the bowels; in this case, the diarrhea should be arrested as speedily as possible, and the strength of the child restored by some tonic, as the sulphate of quinia, or the persesquinitrate of iron, with a nourishing but bland, and easily digested diet.

4.-Cholera Infantum.

(THE SUMMER COMPLAINT OF INFANTS.)

The cholera infantum is a disease that has, with great propriety, been considered as indigenous to the United states. It is certain, that in the various and minute descriptions that have been published, of the bowel complaints of children, which ordinarily occur, in different parts of Europe, or elsewhere, we meet with none that resembles, in all its features, the infantile cholera of this country:—certainly none that prevails to so great an extent, and produces an equal amount of mortality.

The disease occurs, as an endemic, in all the large cities throughout the middle and southern, and most of the western states, during the season of the greatest heat; making its appearance and ceasing, earlier or later, according as the summer varies, in the period of its commencement and close. Thus, in Pennsylvania, Maryland, Virginia, Kentucky, and Ohio, it commences sometimes early in the month of June, and continues until October; prevailing to the greatest extent in July and August: whilst in the more southern states, it appears as early as April and May, and frequently, cases of it occur, until late in November.

Its only subjects are infants; chiefly those between four and twenty months of age;—seldom attacking those younger or older; being commonly confined to the period of the first dentition. So generally is this the case, that an infant's second summer is considered by mothers, as one of unusual peril; and should it escape at that age an attack of cholera, or pass safely through the disease, it is considered

to have a fair chance of surviving the period of infancy.

Cholera infantum is unquestionably one of the most fatal affections to which infants are subject, in the United States. In Philadelphia, during a period of fifteen years, from 1825 to 1839, inclusive, 3352 infants perished from this complaint; being almost ten per cent. of the whole number of infants under five years of age, who died during that period, and 4.5 per cent. of the entire mortality of the city. The cause of the large amount of deaths, produced by cholera infantum, is to be attributed, mainly, to the continued action of the endemic causes by which the disease is generated, from the influence of which, in the greater number of instances, it is very difficult, if not impossible, to remove the infants who are attacked by the disease.

Cholera infantum most usually commences with a profuse diarrhæa, the stools being often of a green or yellow colour, but more commonly, light coloured, and very thin. The diarrhæa seldom continues for any length of time, before an extreme irritability of the stomach manifests itself; every thing taken into it, being immediately rejected, often with great violence. In other cases, the infant is affected with almost constant vomiting and purging; the discharges from the bowels being, ordinarily, a perfectly colourless and inodorous fluid, containing minute mucous flocculi. They are sometimes

small in quantity, and squirted, as it were. from the anus; but occasionally, they are very copious, and passed without the least effort.

In whatever manner the disease commences, the child soon becomes affected with great langour and prostration, and is rapidly emaciated—being reduced in a few days, often hours, to an extent that to those who are not familiar with the disease, would appear almost incredible.

The pulse, in the commencement of the attack, is, usually quick, frequent, small, and often tense. The tongue is covered with a white, slimy mucus. The skin is, in general, dry and harsh; the head and abdomen are hot, while the extremities retain their natural temperature, or, when the attack is violent, are decidedly cold. There is always intense thirst; whatever fluid is taken, being, however, almost immediately ejected from the stomach. Towards evening, there occurs, in most cases, a decided febrile exacerbation. The child frequently suffers more or less pain, as indicated by its fretfulness, low, moaning cries, frequent change of posture, the drawing up of its knees, and its occasional acute screams. The abdomen is often somewhat tumid, and tender to the touch.

In many cases, the excessive irritability of the stomach continues throughout the attack; but not unfrequently, the vomiting becomes suspended at a more or less early period, while the diarrhea continues unabated, or increases in violence; the irritability of the intestinal canal being often such, as to cause whatever food or drink that is taken to pass off rapidly, without having undergone the slightest change.

Occasionally, the patient becomes affected, very early in the attack, with delirium;—his eyes become injected and wild;—his head is tossed violently backwards and forwards; and he frequently attempts

to bite or scratch his attendants.

In very violent attacks, the prostration which suddenly ensues, is so great, as to destroy the patient within twenty-four hours. In general, however, the disease runs a much more protracted course. The emaciation becomes extreme; the eyes languid, hollow, and glassy; the countenance pale and shrunken; the nose sharp and pointed; and the lips thin, dry, and shrivelled—the skin upon the forehead becoming smooth and shining, as if tightly stretched over the frontal bone. The child lies constantly in an imperfect doze, with half-closed eyelids, and so insensible to external impressions, that we have repeatedly seen flies alight upon the half-exposed eyeballs, without the patient exhibiting the least consciousness of their presence.

The surface of the body is now cool and clammy, of a dark brownish hue, and often covered with petechiæ; the tongue is dark-coloured, smooth and shining, or covered, as well as the whole of the inner surface of the mouth, with apthæ. At this stage of the disease, the fauces frequently become dry, causing a difficulty in deglutition, and inducing the patient to thrust his hand deep into the mouth, as if to remove some offending substance from the throat. The abdomen becomes more or less tympanitic, and the hands and feet pallid, or of a leaden hue, and ædematous. The discharges

from the bowels are now generally frequent and profuse, dark coloured and very offensive—resembling the washings of stale meat; in many cases, however, they are small in quantity, and composed entirely of dark coloured mucus, mixed with the food or drinks that have been taken. The infant becomes more and more exhausted, rolls its head about when awake, and utters constant short, plaintive, hardly audible cries. He falls, at length, into a state of complete coma, death being, in many cases, preceded by a convulsive attack. Not unfrequently, at a much earlier period of the disease, effusion takes place in the brain, and the patient dies, with all the symptoms of acute hydrocephalus.

In most of the protracted eases, an eruption occurs upon the breast, of very minute, white vesicles. This Dr. Dewees considers to be invariably a fatal symptom; but we have, in many instances, known the patient to recover, even when this eruption has been the most

extensive and distinct.

The examinations of the bodies of those who have fallen vietims to cholera infantum, exhibits various lesions, chiefly of the alimentary canal. When death occurs early in the attack, the only morbid appearance discovered, is often an unusual paleness of the mueous coat of the stomach and intestines, with more or less eongestion of the liver. Where the disease has continued for a longer period, increased redness, in points or patches, in different parts of the stomach and intestines, is often present. The red points are sometimes very minute and isolated, and spread over a considerable portion of the stomach and duodenum, or over the small intestines only. They have the appearance, generally, of minute extravasations of blood. At other parts of the bowels, these points occur in clusters:—the patches vary in size, but are never very large, and are often slightly elevated, from a thickening of the mucous tissue at the part where they are situated. Occasionally, portions of the mucous membrane, either of the stomach or intestines, are more or less softened—often without the slightest trace of inflammation. In other instances, increased redness of some portion of the intestines exists, with contraction of their calibre, to such an extent, as seareely to permit the insertion of a small sized quill. The muciparous follieles of the intestines, are very generally enlarged, often in a state of inflammation, and occasionally ulcerated. Dr. Horner describes the appearance of the enlarged follicles in the large intestines, as resembling a sprinkling of white sand upon the surface of the mucous membrane. The intestines are in general empty, or contain merely a small amount of thick, tenaceous mueus. Dr. Page describes the appearance of dark spots upon the mueous membrane of the stomach, about its pyloric orifice, but particularly, of the duodenum; and Dr. Lindsly mentions a similar appearance: we have never detected it. The liver is, in general, enlarged, and more or less congested; while the gall-bladder is filled with dark green bile, or with a pale and nearly colourless fluid. The enlarged and congested state of the liver, is noticed by most writers upon the disease. Dewees, Horner, James, Jackson, and Lindsly, describe the enlargement as being in some cases immense. Page states it to be much enlarged, soft, and spongy; and Horner describes it as usually of a light yellow or mottled colour:—we have always found it to be more or less enlarged, but seldom to the extent noticed by most writers, and seldom much changed in colour.

In a large number of the more protracted cases, serous effusion, upon the surface, at the base, or in the ventricles of the brain, is present—in many instances, without indications of inflammatory action, but in others, with thickening and opacity of the arachnoid mem-

brane.

Cholera infantum, comparing the symptoms during the lifetime of the patient, with the appearances discovered after death, would appear to depend upon hyperæmia of the mucous membrane, with an augmentation in the size and activity of function of the muciparous follicles of the alimentary canal—inflammatory action being frequently excited, as well in the follicles, as in the mucous tissue, from accidental sources of irritation.

The disease is evidently dependent for its production, upon the action of a heated, confined, and impure atmosphere, directly upon the skin, and indirectly upon the digestive mucous surface, at a period, when the latter is already strongly predisposed to disease, from the effects of dentition, and from the increased development and activity of the muciparous follicles, which takes place at that period. It is an affection exclusively confined to the stage of infancy—few cases occurring beyond the second, and none beyond the fifth year. During twenty years, the deaths from cholera infantum, in Philadelphia, amounted to 3576: namely, in infants under one year of age, 2122; between one and two years, 1186; between two and five years, 268. The entire number of cases of cholera morbus, that occurred during the same period, was 236: namely, in individuals over twenty years

of age, 173; under twenty years, 63.

The influence of a high atmospheric temperature, in the production of cholera infantum, is shown by the fact, that its prevalence is always in proportion to the heat of the summer-increasing, and becoming more fatal, with the rise of the thermometer, and declining with the first appearance of cool weather in the autumn. A few hot days in succession, in the month of May, are sufficient to produce it; while, during the height of its prevalence, a short period of cool weather, will diminish, if not entirely suppress it. In those infants, who have been prematurely deprived of their natural aliment, or whose diet is composed of crude, indigestible, stimulating, or otherwise unwholesome articles, a heated and confined atmosphere would appear to be alone sufficient for the production of the disease; but the extensive prevalence of the cholera of infants, during the summer months, is not dependent alone upon the influence of heat; but upon the combined influence of a high atmospheric temperature, and confined and impure air. Hence it is almost exclusively confined to the larger and

more crowded cities of the middle and southern states; and in these, it is especially prevalent, and destructive to life, among the children of the poorer classes, inhabiting small, ill ventilated houses, situated in narrow, confined lanes, courts and alleys, or in situations abounding with accumulations of filth. When it occurs in the country, which is rarely the case, it is almost exclusively in low, damp, and otherwise

unhealthy situations.

By many writers, dentition and errors in diet, are enumerated among the causes of cholera infantum. They are unquestionably to be viewed, in many cases, as predisposing, and in others, as exciting causes—but we have, in no instance, known an attack of genuine cholera infantum to occur, without exposure to the influence of a heated, stagnant, and more or less impure atmosphere; and this alone, in the great majority of cases, would appear to be the sole cause of the attack.

The prognosis in cholera infantum will depend, in a great measure, upon our ability to abstract the patient from the continued effects of the endemic influence by which the disease has been produced, and is kept up, as well as upon the period of the attack, at which the treatment is commenced. According to our experience, the disease is one very readily controlled, whenever we are enabled, at an early period, to earry into effect, the proper remedial measures. The chief cause of the great mortality produced by it, being the impossibility, in the majority of instances, of removing the patients from the influence of the heated and impure atmosphere by which the disease has been generated. Without this removal, it is searcely possible, in any instance, to effect a permanent cure; while in most cases, in their commencement at least, little else is required to arrest the disease; and even at a later period, its effects are often evinced, in the rapid improvement of the patient, from almost the very moment the removal takes place.

In very violent attacks, it occasionally happens, that the patient sinks at once—death ensuing in a few hours. Such cases, however, are of unfrequent occurrence; sufficient time being in general afforded for carrying into effect, a proper remedial course of treatment. Even after the disease has continued for many days, and reduced the patient to a state in which a fatal termination seems to be inevitable, by appropriate remedies, a very rapid cure may often be effected. This we have witnessed, not in a few rare instances, but repeatedly.

It is all-important, the moment an infant is attacked with cholera infantum, that he be removed from the heated, confined, and impure atmosphere, by which the disease has been generated, to a situation where he may enjoy the advantages of free ventilation, and cool air. Whenever this can be done in the commencement of the attack, the patient being, at the same time, confined exclusively to the breast, or if weaned, to a diet of tapioca, pure arrow-root, or rice flour, with milk, and immersed daily in a bath, warm or tepid, according as the temperature of the skin is deficient or increased, the disease may, gen-

erally, be arrested, without the administration of any remedy internally, excepting, perhaps, some cool, perfectly bland, and slightly mucilaginous drink—as gum water, or, what we prefer, rennet whey, with a slight addition of gum acacia. Even in cases in which a removal to a healthy and airy situation in the country is impracticable, much benefit may be derived from carrying the patient frequently into the air, in any open and healthy situation in the neighbourhood of his residence, in a carriage, or in the arms, or where his residence is near a large river, by sailing daily in an open boat. At whatever period of the attack we may be called to the patient, his removal to the country, should, if possible, be effected; or, if altogether impracticable, as free an exposure to a pure and open atmosphere, as can be accomplished, should be insisted on.

The apartment occupied by the patient, should be kept strictly clean and dry, and freely ventilated: his clothing, besides being perfectly clean and dry, should neither be too warm, so as to overheat the body, nor so thin and flimsy, as to expose it to the influence of every slight change in the temperature of the air. Fine, soft flannel, or soft, coarse muslin, worn next the skin, will be proper in most cases. The room occupied by the patient at night, should be as large and airy a one as can be commanded:—he should sleep upon a mattress, or on a blanket, folded and laid upon the sacking-bottom of the bedstead, or upon the floor of the crib, his body being defended by a

light, loose covering.

In every instance, a careful examination should be made into the condition of the gums, and if they are found to be hot, swollen and

inflamed, they should be freely lanced.

When the disease commences with a simple diarrhea, the warm bath repeated daily, or even night and morning, and followed by gentle friction over the entire surface of the body, with the hand or a soft dry cloth; cold, mucilaginous drinks, and a combination of calomel, one sixth of a grain, and acetate of lead, half a grain, with about four grains of prepared chalk, repeated every two or three hours, will ordi-

narily, very quickly arrest it.

If there exists great irritability of the stomach, every thing taken into it being quickly rejected, minute doses of calomel, from a sixth to a quarter of a grain, rubbed up with a little dry loaf sugar, and sprinkled upon the tongue, will in general be retained, and speedily quiet the stomach, so that other remedies may be administered. When, however, the vomiting persists, we have found a few drops of spirits of turpentine, or of a solution of camphor in sulphuric æther, repeated at short intervals, seldom to fail in removing it. When the vomiting is violent and frequent, the application of a few leeches to the epigastrium will be found decidedly advantageous. When every thing else fails, we have very seldom been disappointed in removing the irritability of the stomach, by the administration of the acctate of lead in solution. A blister may, at the same time, be applied over the epigastrium for

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three or four hours, and then taken off, and replaced by a bread and milk, or flaxseed poultice.

R.—Camphor. Zj. Æther. sulphurie. Zj.—M. B.—Aq. puræ, Ji.
Acetat. plumbi, gr. v.
Acid. acet. impur. M. v.
Sacch alb. pur. Jiij.—M.
A tea spoonful to be given every hour or
two, until the vomiting is suspended.

When the patient appears to suffer much pain, with increased heat of the skin, particularly about the head and over the abdomen, the latter being tumid, and tender to the touch, leeches should be applied to the epigastrium, in numbers proportioned to the age and strength of the infant, and the violence of the symptoms, and followed by light, emollient cataplasms, or warm fomentations over the whole abdomen. The effects of fomentations to the abdomen of a strong infusion, or decoction of hops, have been spoken of by many practitioners, as The tepid bath should be repeated night and peculiarly beneficial. morning. A tea-spoonful of cold water may be allowed every fifteen or twenty minutes; but the ordinary drink of the patient should be toast, rice, or gum water. In these cases, small doses of calomel, the fourth of a grain, combined with three or four grains of calcined magnesia, administered every three hours, will usually be productive of good effects.

When there exists much heat about the head; a wild and injected state of the eye; aversion from light, with delirium, or other symptoms of cerebral irritation, leeches should be applied to the temples, or behind the ears, with cold lotions to the scalp, and some stimulating embrocation to the lower extremities, or warm sinapised pediluvia. In all instances in which there appears to exist a tendency to disease of the brain, blisters behind the ears, kept open by the use of some

irritating ointment, will be found decidedly beneficial.

As soon as the irritability of the stomach is sufficiently quieted to allow of its administration, the remedy which we have found the most certainly and promptly to restrain the disordered action of the bowels, and complete the cure, is a combination of calomel, prepared chalk, acetate of lead, and ipecacuanha.

cR.—Calomel. gr. iij. Cretæ ppt. gr. xxxvj. Acetat. plumbi, gr. xij. Ipecacuanhæ, pulv. gr. iij.—M. f. Ch. No. xij. One to be given every three hours.

Under the use of this prescription, with the daily use of the warm bath, exposure to a dry, cool and pure atmosphere, and a diet composed exclusively of farinaceous articles with milk, we have, in general, found the inordinate discharges from the bowels to be quickly suspended, and replaced by natural, regular evacuations, As soon as the frequent, watery discharges from the bowels are arrested, we are accustomed to suspend the use of the acetate of lead, continuing the

calomel, prepared chalk, and ipecacuanha, in the same proportions as above, with the addition of half a grain to agrain of extract of hyosciamus to each dose, until regular and healthy stools are procured. The use of some one of the light astringents, directed in cases of ordinary diarrhoa, continued for a few days, is always beneficial, by giving

tone to the bowels, and preventing the danger of a relapse.

When cholera infantum has been allowed to run into a chronic form, its treatment then, will differ but little from that of chronic diarrhæa. The most efficient remedies are, the warm bath, frequently repeated; a blister over the abdomen; anodyne injections, composed of thin starch, and a few drops of laudanum; light astringents, as kino, decoction of dewberry root or geranium maculatum, with a change of air, and a diet of boiled milk, thickened with rice flour, or of plain beef tea or chicken water. Dr. Eberle speaks favourably of the effects of a solution of the tartrate of iron. The persesquinitrate of iron, may likewise be administered, with good effect. In many cases, the sulphate of quinia, in solution, besides exerting a beneficial influence upon the disordered condition of the bowels, will be found useful in restoring strength to the patient, who is always in a state of extreme prostration. When the discharges from the bowels are thin, small in quantity, dark coloured, and highly offensive, with flatulency, and a tendency to a tympanitic condition of the abdomen; or when frequent griping pains are experienced, we have derived the best effects from the use of the turpentine mixture, as directed in the treatment of chronic diarrhea. When great irritability of the bowels is present, we usually direct the addition to the turpentine mixture, of 3iij. tinc. kino or catechu, and the same proportion of the camphorated tincture of opium. In chronic cases of cholera infantum, with acrid, offensive and dark coloured discharges, much advantage will often be derived from the use of pulverised charcoal; we have usually administered it in combination with powdered rhubarb, ipecacuanha, and extract of hyosciamus.

*R.—Tartrat. Ferri. gr. xl.
Aq. puræ, Jij.
Syrup. Zingiber. Jss.—M.
Dose 20 to 40 drops every three hours.

bR.—Carbon. Ligni, Zi. to Zij.
Pulv. Rhei. Đij.
Ipecacuanhæ, gr. iv. ad xij.
Ext. Hyosciami, gr. xij.—M.
f. ch. No. xij.
One to be given every 3 or 4 hours.

When, by a judicious treatment, the disease has been entirely removed, the full restoration of the patient's strength, and the prevention of a relapse, are only to be ensured by the influence of a cool and pure atmosphere; a mild, unirritating diet, and the most scrupulous cleanliness of his person and clothing.

5.—Prolapsus Ani.

A prolapsus, or protrusion of the mucous membrane of the rectum, or of the rectum itself, is a frequent consequence of long continued

See In R. In 1849.7. 169

diarrhoa in children; it may, however, result from the irritation of worms, or from costiveness, and we have occasionally met with it, where the only cause appeared to be a relaxed condition of the sphincter ani; the prolapsus occurring, not only every time the patients had an evacuation from their bowels, but even when they continued for any

length of time in the erect posture.

In slight cases, a very small portion of the mucous membrane is protruded beyond the reetum, with a sense of bearing down and smarting, that continues until the protruded membrane is returned, which may take place spontaneously, or upon the slightest pressure being made upon it. In other cases, a considerable portion of the mucous membrane is protruded, in the form of a small, coiled, pyramidal tumor, of a bright red color, and is with difficulty returnedbeing firmly embraced by the sphineter; if it be allowed to remain out for any length of time, it becomes often, more and more swollen, of a darker red, or even purple liue, and inflammation, terminating in ulceration, or sloughing of the protruded portion of the intestine, may rapidly take place. Occasionally, a considerable portion of the rectum may become prolapsed, and if allowed to inflame, can no longer be reduced, but subjects the patient to much inconvenience and suffering; his digestion becomes disturbed, and death may finally result from impaired nutrition, and long continued irritation.

The prolapsus may occasionally be the result of an invagination of the upper portion of the rectum, or even of a portion of the colon; in these cases the prognosis is generally unfavourable, though cases are on record, in which the invaginated portion has become separated,

and discharged per anum.

Children are peculiarly disposed to prolapsus of the anus, as well from the greater mobility of the intestine; its less extensive connections, in consequence of the imperfect development of the neighbouring organs; the slight curvature of the sacrum, and the perfect mobility of the os coccyx; as from the general laxity of all the tissues,

and the deficient resistent powers at this period of life.

In the generality of cases, if the prolapsus is attended to on its first occurrence, its reduction is seldom attended with much difficulty. The child being placed upon his back, gentle pressure is to be applied upon the protruded portion of intestine, with the thumbs or forefingers, previously smeared with fresh lard or dipped in sweet oil, in such a direction as shall tend to return it within the sphincter; or the forefinger, being introduced into the gut, in order to remove the resistance of the sphincter, gentle, well directed pressure will then generally cause the protrusion to pass within it. The utmost care should be taken to effect the return, every time, and as soon after the prolapsus occurs, as possible. If the patient is affected with a disposition to bear down subsequent to the reduction of the intestine, an anodyne enema, composed of a small portion of opium and three grains of acetate of lead, intimately combined with a little thin mucilage,

should be administered. Proper means, are of course to be pursued, for the removal of the cause by which the prolapsus is produced.

If the prolapsed portion of the intestine should become swollen or inflamed, the application to it of cold water, or a solution of acetate of lead, or a few leeches will be proper, previous to any attempt being

made to reduce it.

When the prolapsus is the result of violent straining, incident to a costive state of the bowels, some gentle laxative, as ripe fruit stewed in molasses, or rye mush and molasses, should be given daily, and the child caused to evacuate his bowels in an erect posture. Washing the anus daily with cold water, or suddenly dipping the nates in cold water, night and morning, has been recommended as a means of preventing the recurrence of the prolapsus, and when there is nothing to forbid its employment, it may be practised, perhaps, with advantage; but it will not be proper in delicate children, in whom there is a predisposition to catarrhal affections, or who are in a state of exhaustion, from long continued diarrhæa, or other disease. In such cases, however, astringent washes and injections of a tepid warmth will often produce a beneficial effect.^a

*R.—Quercus cort. contus. 3j. Aquæ puræ, Oij. Coque ad Oj.

This may be used alone, or with the addition of half a drachm of alum; or a solution of alum alone may be used, in the proportion of ten grains to the ounce of water. A decoction of galls, with or without

the addition of alum, is preferred by some practitioners.

When the prolapsus continues to recur at short intervals, for any length of time, the sphincter becomes, finally, so much relaxed, that the intestine comes down, often to a considerable extent, upon the patient making the slightest exertion, or even assuming an erect posture. In such cases, the intestine must be retained by a soft compress applied upon the anus, and supported by a T bandage. By this means, and the use of astringent injections, and a proper attention to the state of the bowels, a radical cure may often be effected. But should the prolapsus continue still to recur, notwithstanding the employment of these for a reasonable length of time, the propriety of an operation should be considered; the nature of which will depend, in a great measure, upon the particular circumstances of each case:—whether the removal of a portion of the projecting folds of the skin, at the verge of the anns, as practised by Dupuytren—the excision of the circular fold of loose skin around the anus, with a portion of the mucous membrane of the rectum, as recommended by Hey and Macfarlane; or the application of the actual cautery to the margin of the anus, as recommended by Mr. Benjamin Phillips, and practised by him on a child of three years, with complete success.

It has been recommended, that children subject to prolapsus ani, should be made to sit on a hard, flat-bottomed stool or chair, without

arms, and of such a height, that their feet may not touch the ground. (Underwood.)

Polypus of the Rectum.—The attention of the profession has been recently directed to the circumstance of the occasional occurrence of a polypus tumor within the rectum of children. (Stolz, of Strasburg.) Polypus, in this situation, has been very generally overlooked, it being, probably, mistaken for prolapsus ani, to which it bears a very close resemblance. It is, nevertheless, somewhat remarkable, that it should have escaped the notice of almost every modern writer on the diseases of children:—for, although of not very frequent occurrence, it is, nevertheless, much more so than physicians would appear to be aware of. Several instances have fallen under our notice; and although they were generally presented to us as cases of prolapsus ani, yet, upon a careful and minute examination,—a neglect of which, in such cases, would be unpardonable—we have never found the least difficulty in detecting

the true character of the complaint.

When a polypous tumor forms in the rectum, during childhood, the little patient is troubled, at intervals, with a repeated, often ineffectual desire to evacuate the bowels, generally attended with considerable straining, during which, sooner or later, and finally, every time the straining recurs, a tumor is protruded from the anus—varying in size in different cases, from that of a cherry, to that of a large hickory nut. The tumor is, usually, of a bright, or dark red colour, but often white, or of a dirty yellow; it is, in most cases, thickly covered with a tenacious, bloody mucus. When of a dark red, or purple hue, it is apt to bleed freely, especially when handled or irritated. When the tumor is protruded, it is situated in the centre of the anus, and entirely without the sphincter, and appears as if it were attached, all around, to the edge of the anus. On passing the finger into the rectum, a slender pedicle is found to proceed from the base of the tumor, for a short distance within the gut, to the inner surface of which it is attached. When the polypus is of considerable size, the straining efforts to evacuate the bowels are often very violent, and attended, sometimes, with considerable pain; and when it is finally protruded, it is found-to be surrounded by a slight eversion of the lower portion of the rectum. In one of the cases that came under our notice, the tumor, which was of large size, separated, and came away spontaneously; the hæmorrhage which followed was very slight, and soon ceased, without the necessity of our resorting to even a compress. In the other cases, the tumors were readily removed by ligatures—in the application of which there is not the least difficulty—without the occurrence of any severe or untoward symptom.

6.—Invagination of the Intestines.

Intestinal invaginations or intus-susceptions, that is, the passage of one portion of the intestine within that above or below it, are often

met with in children who have died of other diseases, and appear to take place in the act of dying, from some convulsive or inordinate movement of the muscular fibres of the intestinal canal; these invaginations give rise to no symptoms during the life time of the patient, and after death, are reducible with perfect case. Occasionally, however, the invagination, occurring in children, gives rise to symptoms of the most serious character, and speedily destroys the life of the patient.

The symptoms of invagination are obstinate costiveness; progressive tumefaction of the abdomen, with tenderness upon pressure; often repeated paroxysms of acute pain; vomiting of food and drinks, and subsequently of fæcal matter; coldness of the extremities, terminating

sooner or later, in death.

The cause of the obstruction to the onward passage of the faces in cases of invagination, as well as of the other symptoms by which they are ordinarily attended, is, in all probability, the inflammation of the intestine, at the part where the invagination has occurred, in consequence of which, an adhesion of the peritoneal surfaces which are brought into contact, takes place, and in this manner, not only is the calibre of the intestine narrowed, but its regular peristaltic action is impeded or destroyed.

Invagination may take place in any part of the intestinal canal, but is most generally seated near the termination of the ilium. (Staub, Thompson.) Cases are related in which the invaginated portion has sloughed off, and been discharged by the rectum; this seldom occurs,

however, in children.

The disease is, very generally, fatal; no instance has, in fact, fallen within our own observation, of a case, in which the symptoms consequent upon invagination were present, that has terminated

favourably.

The appearances exhibited upon dissection, are those of inflammation of the mucous membrane of the intestines, and often of their peritoneal coat. At the invaginated portion, the mucous surface is often highly inflamed; of a dark red colour, and thickened, and often covered with a dark red effusion, intermixed with portions resembling coagulable lymph; the two serous surfaces in contact are likewise inflamed, with exudation and adhesion.

In the treatment of invagination, such remedies should be employed as are calculated to prevent or reduce inflammation, and to restore the natural action of the intestines:—the warm bath, frequently repeated—leeches and warm fomentations to the abdomen, and absti-

nence from food and drinks.

The forcible injection of large quantities of warm water, or of air, by the rectum, has been strongly advised in cases of invagination; with the view, previous to the occurrence of inflammation, of restoring the natural condition of the intestine. We know of no instance, however, in which this means has been crowned with success:—after the

occurrence of inflammation it will necessarily fail, and may be productive of mischievous effects.

In cases in which the invagination has been preceded by costiveness of the bowels, the injection of a large quantity of warm milk and water through a long elastic tube, passed into the sigmoid flexure of the colon, may do good, by removing from the intestines any hardened and impacted fæces, by the retention of which, we have reason to believe, invagination is occasionally produced.

7 .- Intestinal Worms.

At one period, and that not a very remote one, nearly all the diseases of infancy and early childhood, were ascribed to the presence of worms in the intestines; and notwithstanding repeated and more accurate observations, leading to a better acquaintance with the pathology of the diseases of early life, especially those of the digestive organs, have shown that intestinal worms play a much less important part in their production than was previously supposed, it still remains a matter of dispute to what extent they are to be considered as the causes of certain phenomena, very generally, but by no means constantly, associated with their presence. While by one party, the existence of worms is deemed invariably detrimental to health; by another they are regarded as the effect, and not the cause of disease; while a third consider their presence as altogether innoxious, if not, to a certain extent, beneficial.* This much is certain; namely, that there is no single symptom, or catenation of symptoms, which indicate the existence of worms in the intestines, independently of their presence in the evacuations; they have repeatedly been discharged during life or discovered after death, in cases in which their presence was not suspected; one species in fact, the tricocephalus, Bremser has met with in nearly every body he has opened, and we have seldom failed, in any instance, to detect it; in other cases, in which the most unequivocal indications of the existence of worms were supposed to be present, a careful examination of the evacuations gave no evidence of their discharge during the life time of the patient, and not a single trace of them could be discovered in the intestinal canal after death.

Worms are of very common occurrence in the intestines of children, and may, unquestionably, under certain circumstances, become a cause of severe irritation;—but much less frequently than is generally supposed. It is important to recollect, that even when the presence of worms is established beyond doubt, by their appearance in the discharges, the symptoms of disease under which the patient labours, may be produced by causes totally independent of them, and continue, or even augment in violence, though we should succeed in effecting the complete expulsion or destruction of the worms.

^{*}Dr. Rush entertained this opinion.

The worms that infest the intestines are, the trichocephalus dispar, the oxyuris vermicularis, the ascaris lumbricoides, and the bothrioce-

phalus latus.

The trichocephalus dispar—the trichuris or long thread worm, of some writers—is commonly from an inch and a half to two inches in length; having the anterior two thirds of its body slender, like a hair, while the remaining third is much thicker; it is white, or of the colour of the substances it has swallowed. The sexes are in different individuals. The mouth is at the capillary extremity, which is always found adhering to the surface of the intestine. This worm is met with in the large intestines—most commonly in the excum—which seems to be its natural locality. Frequently but a single individual exists there; and, in almost every instance, a very small number. It is the worm most universally met with.—(Bremser, Bellingham, Mirat.)

The oxyuris vermicularis—the ascaris of Rudolphi and most writers—popularly the maw or thread worm—is from a line to four or five lines long, white, slender, and elastic, blunt at the anterior end, and with a rounded mouth. It is found in the large intestines, and particularly in the rectum of children. This worm generally exists in great numbers; often in the form of a ball, thickly coated or invested

with mucus.

The ascaris lumbricoides—this is the worm most commonly met with in the small intestines of children. It sometimes exists in great numbers; occasionally congregated in the form of a ball. The lumbricoides is usually from three to twelve inches in length, and varying in diameter, from a line to two or three. Its usual colour is white, but changes with that of the substances it swallows. When dead it becomes perfectly stiff. This worm frequently finds its way into the stomach, and may be discharged by the mouth, or through the nostrils.

The bothriocephalus latus—the tania lata, or broad tape worm of many writers—is thinner, and generally wider, than the common tania; it is often twenty feet long, (Bremser,) and may greatly exceed this length, reaching, in some cases, sixty, and in others, upwards of a hundred feet. (Bremser, Robin, Frank, Geöze, Sibbargarrde.) It is of a dirty white colour, and becomes greyish when immersed in alcohol. (Pallas.) It has a large head, with two lateral grooves, which are considered by Rudolphi to be the organs for the absorption of nourishment. It is found in the small intestines. It is seldom met with in the United States, either in children or in adults, but is said to be common in Poland, Russia, Switzerland, and some parts of France.

The *tænia solium* or *common tape worm*, is of a white colour, and of a flat form, with the posterior extremity rounded, and the anterior long and slender, terminating in an extremely narrow neck, with a minute head, armed with four suckers, between which there may sometimes be discovered a small mouth, surrounded by a circle of five hooks. The joints that separate from the posterior extremity of the

tenia solium, have received the denomination of cucurbitani. This worm inhabits the small intestines, and sometimes attains an enormous length. Several tenia are not unfrequently found in the same individual, and, according to Rosen, in conjunction with other species of worms. The fact of the head, or smaller extremity of the tenia solium, not being discovered in the feecal discharges, is no evidence that the entire destruction of the worm has not been effected, as it is extremely easy to overlook so diminutive an object in such a medium. (Bremser.) The tenia is very seldom met with in children under five years of age:—it has, nevertheless, been found in the intestines of new born infants. (Pallas, Bloch.) It is said to occur most frequently in persons engaged in preparing materials from fresh animal substances. (Fortassin.)

It is unnecessary to enter into an examination of the several theories that have been advanced, to account for the production of worms, in the intestinal canal of man, and other animals—whether they are produced by ova received from without, or are the result of equivocal generation. The question is one involved in the deepest obscurity; from which it would be in vain to attempt, with the few imperfectly

observed facts in our possession, its extrication.

The prevalence of intestinal worms, would appear to be much more common in certain districts of country than in others. In Savoy and Chambray, in France, throughout Holland and Switzerland, in certain districts of Germany and Russia, they are stated to be of frequent occurrence, among nearly all classes of society. (Dauquin, Bremser.) According to Mr. Marshall, deputy inspector-general of hospitals, Europeans are very liable to worms in India, and Africans even more so. Few postmortem examinations are made without discovering them. negro passed forty lumbrici in a day, and in the course of seven days, two hundred. (Mackintosh.) The Hindoos are so infested with worms, according to Annesley, that scarcely one in ten is to be found free from them. Different districts of country, are liable to the prevalence of different species of worms;—thus, in Switzerland, Poland, Russia, and some parts of France, the bothriocephalus latus is most commonly met with; while in Egypt, Holland, Germany, the greater part of France, Italy, and Sweden, the tænia solium, is the most frequent worm. (Rudolphi, Bremser, Hasselquist, Mérat, Rosen.) The lumbricoides and oxyuris, are the worms most usually met with in the United States, Great Britain, India, and among the negroes of the West Indies. According to Bremser, worms are more common in cities than in the country—a statement which our own experience has not confirmed. They are also said to be more prevalent in cold, damp, low, confined, and unhealthy situations, than in those which are temperate, dry, well ventilated, and elevated; and during the spring and autumn, than during the other seasons of the year. (Mérat.) The poor, likewise, who are badly nourished and lodged, and filthy in their persons and habitations, are reputed to be more liable to intestinal worms, than those in comfortable circumstances and of cleanly habits. We are not aware, however, that these statements are founded upon any very accurate observation of facts. So long as worms are considered a principal agent in the production of intestinal diseases, they will, of course, be reputed to be most prevalent in those situations, and among those classes of society, in which such diseases are most liable to occur. And this, to a certain extent is, in fact true; for it has been invariably found, that the same causes which disturb the healthy functions of the digestive organs, and predispose them to disease, are precisely those which favour the production and

increase of worms.

Worms have been said occasionally to prevail epidemically. It is certain, that at particular periods, they have been met with much more frequently, and in greater numbers, than at others. Many authors have described an epidemic of verminous fever; that is to say, fever of a gastric, mucous, or bilious character, accompanied with the presence of worms, often in considerable quantities. It is difficult to say, what was the real nature of this fever, and whether it might or might not be fever with irritation of the digestive apparatus, one of the consequences of which was, a discharge of worms already existing (Stokes.) Andral met with worms in only a very small number of the autopsies performed by him in cases of death from fever; they were very numerous in one case, but very few in the others. They were ascarides lumbricoides, and tricocephali; he deemed them merely an accidental complication of the disease. In one instance, they coincided with most of the symptoms characterizing mucous fever. In most of those who died of the epidemic mucous fever of Göttingen, Ræderer and Wagler found a great number of worms in the intestines; and the same was observed in a species of mucous fever which, in 1836, prevailed, in conjunction with the cholera, at Naples. (Thibault.) From the frequency of worms, in cases of intestinal inflammation, Broussais considers them as most frequently the product of the altered condition of the intestinal mucus, and the heat which results from gastro-enteric inflammation, of a greater or less intensity. This doctrine is by no means supported by the evidence of facts; for it has been proved that worms may exist in connexion not only with every possible pathological condition of the intestinal canal, but also, where this is free from the slightest trace of disease. Andral met with them in all conditions of the intestines, whether they were red or pale, dry or covered with mucus; they were most commonly enveloped in a quantity of mucus, and there was some redness of the part where they were lodged, but this appeared rather the effect of their presence, than their cause. I believe it to be a fact, remarks Dr. Stokes, that persons in excellent health, and with the intestinal canal in the normal state, may have worms. It has been shown, that in epidemic mucous fever, worms are not always present. (Sarconi.)

As remote causes of worms, the following are generally enumerated:—too rapid growth; scrofula; a sedentary inactive mode of

life; habitual exposure to a damp, confined atmosphere; indulgence in crude unripe fruits; the abundant use of fat, farinaceous and saccharine articles of diet, and of fresh milk. (Bremser, Marley.) Others attribute them to the want of a sufficiency of salt being taken with the food eaten. We do not believe that any particular articles of food, or course of life, has a tendency to promote the formation of worms in the intestines, excepting so far as they have a tendency to disorder or interrupt the functions of the digestive organs. When digestion becomes impaired, from whatever cause, we have the most unquestionable evidence, that an increased development of worms in the intestines is especially liable to take place; and it is, from the increased irritability of the intestinal mucous membrane, so frequently associated with a disordered state of the digestive function, that they are then so apt to give rise to a variety of morbid phenomena. Worms so frequently exist in early life, without any—even the slightest—indication of disease, (Heberden, Butter, Rush, Hosack, Mérat, Bloch, Andral, Stokes,) that we can only consider them as productive of injury from their numbers, or from some co-existing pathological condition of the alimentary canal.

Though worms may occur at any period of life, they are most commonly met with during infancy and childhood; more particularly the oxyures and lumbricoides. At La Saltpétriêre, the hospital at Paris for the reception of patients advanced in life, worms are scarcely ever met with in the bodies of those who die; while in the Foundling Hospital of the same city, they are very commonly present, and often in great numbers, in the same body. (J. Cloquet.) The number of lumbricoides that are often discharged by children, or are found in their intestines after death, is often almost incredible. Eighty lumbricoides, have been expelled during a fever, and the whole intestinal canal has often been completely filled with them. (Frank.) We have known one hundred and twenty lumbricoides to be voided by a child five years old, in a single day, and have seen the rectum literally crammed

with an immense mass of oxyures.

Worms seldom occur in children who are confined to the breast. Dewees has never seen them in those under ten months of age; others, however, have detected them in the youngest infants, even in

Children who are affected with worms, are usually of a pale or sallow complexion, with a bluish circle around the eyes, and a more or less tumid abdomen. They are troubled with itching at the nose and anus, headache, foul breath, nausea, hiccup, and gnawing pains of the stomach or intestines; their breath is foul, their tongue more or less coated; their appetite irregular and capricious, often voracious; and their bowels are either affected with costiveness or with diarrhæa. Whatever kind or amount of nourishment is taken, they are generally thin and pale—and of an indolent and languid habit—while their sleepis often disturbed by frequent startings and grinding of the teeth. Each and all of these symptoms, however, may be present, and not a single worm

be present in the intestinal canal. According to Rosen, one of the most certain indications of worms, is the relief experienced by the patient after having discharged portions of them, or after taking a

a glass of cold water.*

We are furnished by authors with a long list of sympathetic affections, all of which are said to have been repeatedly produced by the irritation of intestinal worms, and to cease upon the expulsion or destruction of the latter. To this cause have been ascribed epilepsy, hysteria, chorea, convulsions, dilatation of the pupils, perverted vision, amaurosis, convulsive laughter, spasmodic closure of the glottis, hydrophobia, aphonia, and hæmoptysis; it is even asserted that symptoms simulating those of hydrocephalus, disease of the heart and lungs, croup, and pertussis, have been produced by worms.

That the several morbid conditions here enumerated, are capable of being produced by intestinal irritation, we are perfectly aware; how far, however, they are attributable to the presence of worms, it is somewhat difficult to decide. In many cases the very remedies to which the expulsion or destruction of the latter is attributed, may effect the cure of the morbid symptoms with which the patient was affected, by the removal of an irritation of the intestines totally inde-

pendent of the presence of worms.

A number of cases are related, in which the most violent paroxysms of dyspnæa and spasmodic cough, were produced by the passage of lumbricoides from the stomach into the posterior fauces; they have occasionally also found their way into the trachea and bronchii, and caused the death of the patient. (Haller, Blandin, Andral, Füchs,

Fortassin.)

By many writers worms are supposed, in some cases, to destroy life, by perforating the coats of the intestine. We have, in more than one instance, detected lumbricoides in the cavity of the peritoneum, the intestine being perforated at one or more points; we have seen them likewise in the act of passing through a perforation of the intestine, and, apparently so firmly fixed in the opening as to be unable to proceed further. In all these cases, a close examination has convinced us, that the perforation was the result of disease—either softening or ulceration—and not produced by the worms. It has indeed been denied, and very correctly, that worms are capable of perforating the intestinal coats. (Andral, Rudolphi, Frank, Cruveilheir, Cloquet, Carswell, Stokes.) Rudolphi declares that they possess no apparatus for effecting a passage through any continuous membrane; and Andral remarks, that there is no well authenticated instance on record of such an occurrence. How far, in any case, the perforation may be the result of an inflammation, followed by softening or ulceration, excited by the presence of worms in the intestines, is a question difficult of solution. So far as our own observations extend, we

^{*} Dr. Eberle has strangely mis-stated this observation of Rosen von Rosenstien.

should unquestionably assume the negative. With Dr. Evanson, we believe, that worms may exist at the same time with intestinal inflammation or ulceration, as these affections are common in those children who are most subject to worms; and, should the intestines be perforated by softening or ulceration, the lumbricoides, if present, will often pass through, and be found in the peritoneal cavity; but this is a

consequence, and not the cause of the perforation.

In proceeding to the treatment of a supposed case of verminous disease, it is important, at the very outset, to determine, not only the fact of the actual existence of worms, but, if they do exist, whether they are in any degree concerned in the production of the morbid phenomina under which the patient labours. Both of these circumstances, but particularly the latter, are too often taken for granted, and the most serious errors are, in consequence, committed; the real disease is overlooked, and one vermifuge after another is resorted to, while the patient, notwithstanding the abundant discharge of worms occasionally produced by them, exhibits no improvement, but sinks more or less rapidly, into a state of suffering and debility, the termination of which is death.

We are to recollect, that almost every symptom said to indicate the presence of worms in the intestines, is produced by irritation of the alimentary canal, and may occur without their existence; and that even in those cases in which the presence of worms is proved beyond doubt by their appearance in the discharges, there is no certainty that they are the cause of the symptoms which exist, or that they are not

a mere coincidence.—(Stokes.)

In every supposed verminous case, therefore, we would advise that all heating and irritating vermifuges be abstained from, and that our treatment be directed chiefly to restore the regular healthy action of the digestive organs, and the strength and vigour of the body generally. We have been in the habit of pursuing this plan for a number of years, and have seldom been disappointed in promptly and effectually relieving our patients, and have had but little necessity for resorting to either of the articles which strictly appertain to the class of anthelmintics.

A regulation of diet, is of the first importance in every case, and the articles of which it should be composed, will, in a great measure, depend upon the condition of the alimentary canal: if this is in a state of severe irritation, or of sub-acute inflammation, the diet should consist solely of rice water, or of rice with milk; but where the irritation is less decided, the child may be allowed stale wheat bread with milk, night and morning, and in the middle of the day, some fresh animal food, as mutton chop, boiled fowl, or beef steak, in small quantity, with bread or crackers. To this may be added, plain beef, mutton, or chicken broth, with rice, or plain rice pudding. Fresh vegetables, fruit, pastry, salted food, tea and coffee, and every species of confectionary should be interdicted. It will frequently be found difficult, at first, to induce children who have been indulged

with all kinds of improper food, to restrict themselves to so plain a diet; but it is better to let the child fast, than to deviate from it. With a proper degree of firmness on the part of the parents and attendants, the period of abstinence will seldom be a very protracted one. (Alex-

ander.)

The child should be allowed and encouraged to exercise in the open air, for several hours every day; and, as far as possible, a situation should be made choice of for this exercise, in which dryness is combined with perfect purity of the atmosphere. Nothing is better calculated, by invigorating the functions of the digestive organs, and improving the health of the body generally, to prevent the development of worms in the intestines, and the inconveniences thence resulting, than a sufficient amount of active out door exercise; and yet the weakly, debilitated child, in whom worms are most apt to occur, and to produce the greatest amount of mischief, as well from his own indolence and inertness of disposition, as from the prejudices and misplaced tenderness of parents, is the one most generally kept inactive and within doors.

Next to diet, exercise, and exposure to fresh, pure air, nothing is so important in these cases, as frequent warm bathing—followed by frictions to the surface; the functions of the skin are promoted by it, the circulation of the blood is equalized, and the stomach and bowels,

in common with every internal organ, become invigorated.

In regard to the employment of medicinal articles, in cases of worms, the propriety, as well as the character of these, will depend very much upon the condition of the digestive organs. If the symptoms present indicate that the latter are in a state of severe irritation, or of inflammation, whether acute or sub-acute, it will be necessary, before resorting to the administration of any internal remedy, to allay the irritation or inflammation, by leeches, fomentations, and cool mucilaginous drinks. There are few cases in which, however, we may not venture upon the administration of calomel, either in a full dose, followed, in a few hours, by a portion of castor oil, or in smaller, and frequently repeated doses, combined with ipecacuanha and extract of hyosciamus. Three grains of calomel, with half a grain of ipecacuanha, and the same quantity of hyosciamus, given three times a day, will seldom fail to act as a pretty effectual purgative; and we have known it to bring away large quantities of lumbricoides. If nothing is present to forbid its use, we may give a purgative of calomel, rhubarb, and jalap—the proportions of each ingredient being adapted to the age of the child; or, perhaps, a better combination will be, calomel, jalap, and scammony, given at first in a full dose, and repeated subsequently, in small, alterative doses, on every alternate night, at bed time, succeeded, on the morning following by a small dose of castor oil. (Alexander.) In cases of lumbricoides, attended with a disordered condition of the stomach and bowels, without any evidence of inflammation, we have found this to act very favourably.

The article, however, from which we have derived the most

decidedly beneficial effects in verminous cases, is the spirits of turpentine. It may be given in those in which there exists considerable irritation of the alimentary canal, or even sub-acute inflammation, without any fear of its increasing either; and while we have found it more certainly than almost any other article to effect the destruction of the worms, it, at the same time, would appear to produce a beneficial action upon the digestive organs, and to aid in restoring them to a healthy condition. The turpentine may be given with perfect safety, to the youngest child in which worms usually occur. The rectified spirits should be directed, and may be given in sweetened milk, in molasses, or in the following mixture. It is generally recommended to be given in much larger doses, from half a drachm to a drachm, combined with or followed by castor oil; (Alexander, Copland, Evanson;) we have preferred, however, smaller doses; either thirty drops upon a piece of loaf sugar, three times a day, or in the mixture referred to. The spirits of turpentine is a remedy equally adapted to all the varieties of worms, and of all the anthelmintics it is the one, in favour of the efficacy of which the greatest amount of evidence can be adduced. (Bartholine, Chabert, Fenwick, Chisholm, Copland, Coffin, Klapp, Alexander, Marley, Schmidt, Eberle.)

> *R-Mucilag. G. acaciæ, Zij. Sacch. alb. 3x. Spir. æther. nitr. Ziij. Spir. terebenth. rec. Jiij. Magnes. calcinat. 9 Aq. menthæ, 3j.—M.
> Dose.—A dessert spoonful every three hours.

The cowhage or down of the dolichos pruriens, is recommended as a safe and useful remedy for the expulsion of worms; (Kerr, Cochrane, Macbride, Underwood, Bancroft, Chamberlaine, Stokes;) especially the lumbricoides, and oxyures. We know nothing of the article from our own experience, having never employed it. In its use, care should be taken to combine it intimately with the honey or syrup, and to prevent any portion from being spilled upon the lips, face, breast, or arms of the patient.

aR.—Spicular. Dolichi, Ji.
Mellis vel sacchari liquid. impur. q. s. ut fiat electuarium.

Dose.—A teaspoonful to be given every Dose.—A teaspoonful to be given three times norning, fasting for three successive a day, for two or three successive days, days, and then followed by a brisk cathartic.

Or, R.—Spicular. Dolichi, 9j. Syrup. cort. aurant. 3j .- M. f. elect-

and then followed by a purgative.

The oleum chenopodii is a remedy in considerable repute with American practitioners; we have employed it in some cases with decided advantage.3

²R.—Ol. chenopodii, 3j. Sacch. alb. pur. Gum. acaciæ, aa 3jss .- M. dien adde Aq. menth. sativæ, Zijss. Dose .- A teaspoonful every three hours, for two days in succession, to be followed then by a dose of castor oil.

It should not be given in any case in which we have reason to suspect the existence of inflammation of the intestines, or that is

accompanied with febrile excitement.

The following formula is strongly recommended by Bremser, in cases of lumbricoides; and has been employed in several cases by Eberle, with complete success. Exhibited to such an extent as to produce frequent and watery evacuations, it does far less good, than when managed so as to procure three or four consistent stools daily.^a (Eberle.)

*R.—Sem. Santon.

Fol. tanaceti vulgar. contus. aa. 3ss.
Rad. valerian. pulv. 7ij.

"Jalapæ " 3jss.
Sulphat. potassæ, 7ij.
Oxymel. seillæ q. s. ut ft. electuarium.

Dose.—A teaspoonful two or three times a day, for six or seven days.

The fucus helminthocorton is a favourite anthelmintic with most of the French physicians; Dr. James Johnson, of London, declares it to be one of the most powerful of all anthelmintics. A strong decoction thrown into the rectum, destroys, he remarks, any worms domiciliating there, as effectually as choke-damp would destroy the life of a miner. A strong decoction of the helminthocorton has appeared, to Dr. Eberle, not only valuable as a vermifuge, but particularly so, as a corrective of that deranged and debilitated condition of the alimentary canal, favourable to the production of worms. An ounce of the helminthocorton with a drachm of valerian, should be boiled in a pint of water down to a gill; of this, a teaspoonful may be given every morning, noon, and evening, with peculiar advantage. Dr. Eberle has known several instances, in which children, apparently suffering from verminous irritation, were restored to perfect health by the use of this remedy, without any appearance of worms in their excretions. It is particularly beneficial in cases attended with the usual symptoms of worms, with want of appetite, and mucous diarrhea, arising from mere debility of the digestive organs, and a vitiation of the secretions of the bowels.

Common salt is, perhaps, one of the best anthelmintics we possess; it has often succeeded in the destruction of worms when other remedies have failed. (Marley.) It was a favourite remedy with Dr. Rush, and whenever we have been able to induce children to take it in a sufficient dose, we have never been disappointed in its effects; an ordinary sized teaspoonful dissolved in a wineglassful of water, is the proper dose for a child two or three years old.

A number of other anthelminties might be noticed, as garlic, tin filings, spigelia Marylandica, the green rind of unripe walnuts. Those we have enumerated, are, perhaps, among the best and most successful we possess. Several German practitioners have lately recommended the etherial tincture of the buds of the male fern, (polypodium filix mas,) as a most effectual remedy in cases of intestinal worms.

Peschier, of Geneva, is the discoverer of this tincture; his brother asserts, that he has cured 150 cases of lumbricoides, trichocephali, and teniæ, in nine months, with this remedy alone. Dr. Fosbroke appears also to have had great success with the remedy; dose—from

one to ten drops in pills, or on sugar.

After the removal of the worms, some light bitter infusion, or a chaly-biate will be proper to restore tone to the stomach and intestines. The infusion of gentian or calomba, with an equal portion of an infusion of rhubarb, and a few drops of the compound spirit of ammonia, is recommended by Marley; we may, however, employ the tincture of the sesqui-chloride of iron, by itself, or in combination with the tincture of aloes, as recommended by Stokes; or the carbonate of iron, which was a favourite prescription of Dr. Rush; of which five to ten grains may be given to a child a year old, every morning. Dr. Dewees considers a combination of equal parts of carbonate of iron and common salt, from ten to thirty grains, according to the age of the child, to be one of our best tonics, in cases in which there is a strong disposition to the generation of worms. The powders should be given in syrup or molasses, in the morning, fasting, for twelve successive days.

aR.—Tinct. ferri sesquichlor.
 Tinct. aloes, āā partes æq.
 Dose.—Twenty drops, three or four times a day.

In cases in which children are infested with oxyures, the same general treatment will be proper, as in the other varieties of intestinal worms; as these, however, almost invariably inhabit the lower portion of the rectum, and their presence can generally be detected by the inordinate itching at the anus, to which they give rise, as well as by their appearance, often in immense numbers, in the discharges, or by their passage from the rectum, while the child is asleep in bed; we have it in our power to dislodge or destroy them by injections thrown into the rectum. A great variety have been recommended for this purpose; among the most effectual of which, may be ranked a solution of common salt, turpentine, aloes, an infusion of helminthocorton, lime water and milk, camphor, a solution of sulphate of iron, or a solution of assafætida in milk.

aR.—Spir. terebenth. rec. Jj.
Laetis, Jiv.—M.
Or, R.—Spir. terebenth. rec. Jj.
Vitell. ovi,
Aquæ, Jiv.—M.
bR.—Decoet. aloes, Jij.
Laetis, Jj.—M.
Or, R.—Gum. aloes, Jss.
Laetis, Jiv.—M.

cR.—Fuc. helminthocorton, \(\)j,
\[Aquæ, Oj.
\]
Boil to one-half.
cR.—Camphor. gr. xv.
Olci olivæ. \(\) iv.—M.
cR.—Ferri sulphat. \(\)j,
\[Aquæ, \(\)jiv.—M.
cR.—Assafætidæ, \(\)ji,
\[Lactis, \(\)jiv.—M.

A bougie smeared over with strong mercurial ointment, and introduced into the rectum, will often prove successful; while the precipitated sulphur, taken for a few mornings in succession, is said to be

a most efficacious means for the destruction of the oxyures. (Von-

vert.

The complete removal of these worms is a work of no little difficulty. They are surprizingly productive, and even after thousands have been discharged, they are found, after a very short period, to have re-accumulated to the same extent as before. By pursuing at the same time a course of treatment calculated to restore the healthy functions of the alimentary canal, we may very generally succeed in preventing, finally, their re-production, by the use of purgatives composed of blue mass, aloes, Venice turpentine, and extract of hyosciamus, and the occasional use of either of the enemeta just enumerated.

*R.—Mass. f. pill. hyd.

Terebenth. Venet.
Aloes, gr. āā xxxvj.
Extract. hyosciami, gr. xx.—M. f. pill. No. xxv.

Two to be given every three hours, until an active purgative effect is produced.

These worms are chiefly annoying from their becoming involved in the pouches and folds at the lower part of the rectum, and giving rise, oceasionally, to violent tenesmus, or more commonly, to an insupportable titillation and itching about the anus. This is generally experienced to the greatest extent towards evening, or soon after the child is put to bed; often preventing sleep, and producing a considerable degree of nervous irritability. They are said oceasionally to give rise to inflammation about the anus, and convulsions; the first may perhaps, be occasioned by the frequent rubbing and scratching of the part, by the child, to allay the inordinate itching;—the second we have never witnessed.

8.—Enteritis.—Inflammation of the Small Intestines.—Ileitis.

Inflammation of the small intestines, either alone, or combined with inflammation of the stomach, or of the large intestines, is a much more frequent disease during infancy and childhood, than is even now generally supposed. The diarrhea, as well as vomiting, so common in the earlier stages of life, is, as we have already seen, in a large number of cases, the indication of enteritis, or gastro-enteritis; while many of the diseases, described by the leading writers on the diseases of children, as distinct affections, are, in fact, the result of different grades of inflammation, seated in the mucous membrane of the small intestines:—this is unquestionably true of the intermittent or worm fever of infants, and of the tabes mesenterica in its most usual form; as has been ably pointed out by Drs. Chevne, Marsh, Mackintosh, and Stokes; the same is true, likewise, of the atrophia ablactatorum, as our own examinations have fully proved; and the enumeration might, if necessary, be extended much further.

The leading symptoms of infantile enteritis are, vomiting, diarrhæa, tension, and tenderness or pain of the abdomen upon pressure, often

accompanied by augmented heat of its surface, tympanitis, redness and dryness of the tongue, and general heat and dryness of the skin.

The matters vomited are usually of a yellow colour, and of a frothy appearance; vomiting is not, however, invariably present and, unless some degree of gastritis occurs, it does not take place immediately after the ingestion of food or drinks. When the inflammation affects the ileo-cœcal valve, the consequent tumefaction may prevent, or so far obstruct the passage of the fæces, as to give rise to fæcal vomiting, as in other cases of intestinal obstruction.

Diarrhoa is more generally present than voiniting—with it the disease often commences, or it occurs at an early period of the attack; the discharges are usually of a green or yellow colour, and sometimes bloody, but rarely serous. Tympanitis, and more or less tension of the abdomen, with pain, or at least, tenderness upon pressure, are almost constant indications of enteritis. The tenderness or pain is situated lower down than in cases of gastritis; it is also more diffused, and seldom so intense. The patient, in general, lies upon his back, with his knees drawn up, and his countenance is always expressive of great distress. The skin is usually hot and dry, and the increase of temperature is often most striking at the The tongue is usually red at its point and edges, dry, and coated, on its upper surface, with a layer of white or yellowish mucus; the redness and dryness of the tongue, however, are most marked in cases of gastro-enteritis; in those of simple enteritis, the tongue may be moist, and of its natural colour. There is usually more or less thirst; but the desire for cold drinks is not so evident as in the acute febrile affections. Notwithstanding the increased heat and dryness of the skin, and augmented thirst, a decided febrile reaction is seldom met with in cases of enteritis, occurring previous to dentition; subsequently, however, the disease is often attended with fever of a remittent form, with evident exacerbations towards evening. There is also considerable and rapid prostration of strength, far greater than can be accounted for by any degree of diarrhea that usually attends the disease.

In the advanced stage of enteritis, the diarrhoa in general decreases, but the abdomen continues tense and tympanitic; the skin assumes an ashy hue, and becomes cool, particularly at the extremities, which are often decidedly cold; great emaciation ensues, the cheeks become hollowed, the eyes sunken, and the face wrinkled and contracted; which, when the teeth are not yet developed, gives to it the appearance of premature old age. The whole expression of the countenance is that of prolonged suffering; and to the experienced observer affords a very certain indication of the existence of long continued

and extensive intestinal disease.

In the chronic forms of enteritis, it is not uncommon for very considerable enlargement of the mesenteric glands to take place; this is particularly the case in children of a very decided lymphatic temper-

ament, but it may occur without this predisposition to glandular affections, in consequence of the propagation of disease along the course of the lymphatics, from the mucous surface of the intestines, to the mesenteric ganglia. (Stokes.) In the great majority of instances, tabes mesenterica is, in fact, the result of chronic or sub-acute enteritis; this connection of the two diseases was long since pointed out by Cheyne, and will be evident to any one who will trace back the history of each ease to its earlier stages, and carefully examine, in the event of a fatal termination, the condition of the mucous membrane of the ileum; in which, very generally, will be found the evidences, if not of existing, at least of preceding inflammation. This is soft a matter of merely theoretical nicety, but has a very important practical bearing; the usual treatment pursued in cases of tabes mesenterica, being one rather calculated to augment, than to remove the disease; whereas, the treatment proper in cases of enteritis, if pursued from the commencement of the attack, will, very generally, prevent the occurrence of the mesenteric affection, and even where the latter has already occurred, it is the only one calculated to effect its removal. This statement we make as the result of a tolerably extensive experience, among a class of patients who are generally reputed to be most liable to takes mesenterica.

Most commonly, enteritis is more or less prolonged, and the patient, in a state of extreme marasmus, dies from exhaustion; occasionally, however, the disease assumes a more acute form, and death occurs at an early period, from violent peritonitis, the result of a perforation

of the coats of the intestines, from ulceration or softening.

It is important to bear in mind the fact, that in cases of enteritis, sympathetic irritation of the brain, or of the lungs, is very liable to take place; and when these sympathetic irritations are somewhat intense, they are apt to obscure the original disease, and cause it to be entirely overlooked. It is essential to the safety of the patient, that the true character of these cases be well understood; for while the sympathetic affection is not to be overlooked, lest it run on into inflammation of the organ in which it is seated, and produce effusion or disorganization, at the same time the original disease should not be neglected, for so long as this continues unabated, the removal of the secondary affection is with great difficulty effected.

The pathological appearances, observed, after death in cases of enteritis, are various; in some, the mucous membrane of the ileum presents irregular patches of redness, of greater or less extent, indifferently situated, either in a depending or non depending portion of the tube. (Billard.) These patches are generally accompanied with tumefaction of the tissue, at the parts where they are situated, and often by a softened or friable condition of the latter; there is, at the same time, often more or less blood effused in the intestinal canal—often of a dark, softened appearance. In many cases, the intestinal mucous membrane is studded with flakes of curd-like matter, generally of a yellow or greenish colour; these flakes adhere to the sur-

face of the membrane, and cannot be separated without a slight degree of force. The muciparous follicles of the intestines are often enlarged; occasionally they are also red, and frequently are in a state of ulceration;—the inflammation may occur in the isolated follicles, or in the follicular plexuses. In chronic cases, dark purple or slate coloured patches or striæ, upon some portion of the intestinal mucous membrane, are not uncommon. Softening of the mucous membrane, to a slight degree, is very often present; but, in chronic eases, the tissue is occasionally reduced to a soft, reddish, sometimes diffluent mass. (Billard.) The ulcerations, as well as the softening, may implicate the entire thickness of the intestinal coats, giving rise to perforations, with escape into the peritoneal cavity of the contents of the bowels; in such cases, death quickly ensues, in consequence of the occurrence of acute peritonitis. Billard, Béclard, Cloquet, and others, describe a species of gangrenous ulceration, as one of the terminations of enteritis; thus certain ulcerations of the ileocœcal region, occasionally exhibit the same black, soot-like edges, that occur in ulcerated apthæ of the mouth, (Billard,) or some circumseribed points of the mucous membrane become changed to a greyish pulp, which, on separating, gives place to an ulcer with projecting edges. The bottom of the ulcer is destroyed more or less quickly, and a complete perforation of the intestine ensues; adhesions are often promptly formed between the peritoneal surface of the intestines, and prevent an escape of the contents of the bowels. (Cloquet.) We have repeatedly observed all of the lesions here described, with the exception of the last, with which we are not familiar. Ulcerations are extremely common, in all protracted cases; they are sometimes very numerous throughout the whole of the ileum, (Abercrombie,) and vary in diameter from that of a split pea, to that of a sixpense. The mesenteric glands are frequently enlarged, and very vascular, and, in chronic cases, are often in a state of suppuration, or converted into a cheese-like matter of greater or less firmness.

The causes of enteritis are, in general, overloading the stomach with food, improper articles of diet, the influence of cold, and an impure and confined state of the atmosphere. They are the same with those usually noted, as productive of diarrhæa in infancy and childhood; in fact, in a large number of cases, the disease commences with an attack of ordinary diarrhæa, which, being neglected or mismanaged, vomiting, intumescence and tenderness of the abdomen, heat and dryness of the surface, with the other symptoms of intestinal inflammation, are successively developed. In many cases, the occurrence of enteritis is either caused or accelerated by the repeated purgatives to which infants and young children are so often subjected, for the cure of every accidental disturbance of their stomach or bowels,

or for the removal of worms.

The treatment of enteritis differs but little from that of gastritis. The diet should be restricted to some mild mucilaginous fluid, as rice water, gum water, infusion of the bark of slippery elm, or milk diluted with barley water, and sweetened with a small quantity of loaf sugar.

The warm or tepid bath is an all-important remedy; nothing in all the inflammatory affections of the alimentary canal produces so soothing and tranquillizing an effect upon the patient. The bath should be repeated daily, or, in severe cases, even oftener:—its temperature should be regulated, according to the state of the child's surface—being decidedly warm, when the heat of the skin is deficient, and of tepid warmth, when it is augmented. Warm, emollient cataplasms upon the abdomen exert likewise a beneficial effect upon the symptoms of the disease, and tend to allay the local tension and pain.

In most cases, leeching will be proper; the leeches should be applied over the surface of the abdomen, and graduated in number, according to the intensity of the local symptoms. Some degree of judgment, however, will be demanded, in the employment of leeches, in inflammations of the intestines. Few cases occur, in which a moderate application of them will not be proper and beneficial; and whenever the pain, heat, and tension of the abdomen are considerable, they should be more freely employed, and may be repeated, if the first application fails to produce a decided abatement of the symptoms just enumerated. While we are cautious, in no instance, to carry the leeching to such an extent, as greatly to increase the prostration of the patient's strength, we should recollect that, in violent cases, a favourable termination of the disease will, in a great measure, depend upon the early employment of a sufficient number of leeches.

To allay the diarrhœa which, in many cases, is a prominent and very troublesome symptom, many physicians recommend the employment of opiate injections; but in acute cases, we are by no means convinced of their propriety. We have, however, derived advantage from the exhibition of minute doses of calomel, ipecacuanha, extract of hyosciamus, and acetate of lead. These we have found not only to arrest the diarrhœa, but to have a beneficial effect upon the intestinal disease, allaying pain and irritation, and producing natural and regular evacuations. If, from any cause, this combination should be considered as unadapted to the case, the acetate of lead in solution may be given by the

mouth, or in the form of enemata.

* R.—Calomel, Ipecacuanhæ, aa gr. ij. Ext. hyosciami, gr. iv.—vj. Acetat. plumbi, gr. viij.—xij.—M. f. pill. No. xij. One to be given every three hours.

Blisters to the abdomen will often be found advantageous, especially in protracted cases; they should be kept on a few hours, and followed by a bread and milk poultice. In very acute cases, warm sinapised pediluvia, or sinapisms to the extremities, will generally be productive of good effects.

In chronic cases, the warm bath, blisters to the abdomen, the internal exhibition of calomel, ipecacuanha, and extract of hyosciamus, with the addition, when diarrhea is present, of the acetate of lead; and when the discharges are thin and offensive, the use of turpentine

are the remedies, from which the greatest amount of relief will be obtained. The diet should be mild, unirritating, and taken in small quantities, at properly regulated periods; plain chicken water, arrow root, tapioca and milk, or beef tea, will, in most cases, be proper articles of food—producing but little irritation, and supporting the patient's strength, which, in cases of chronic enteritis, is very apt to be greatly prostrated. By some practitioners, it is considered beneficial to dress the blisters upon the abdomen, with mercurial ointment, or to apply this by friction over the abdominal surface, in cases where blisters have not been applied.

When a state of convalescency has been procured, the skin becoming soft and moist, the tongue clean, the stools more regular and natural in appearance, with a disappearance of the tenderness and tume-faction of the abdomen, and a return of the natural appetite, the administration of some light tonic will, in general, be found beneficial,—more rapidly restoring the patient's strength, and rendering a

relapse less liable to occur.

9.—Colitis.—Inflammation of the large intestines.—Dysentery.

Inflammation of the large intestines seldom occurs independently of some degree of enteritis, and is occasionally accompanied with more or less gastro-enteritis. It is chiefly distinguished from enteritis, by frequent small discharges from the bowels of mucus, generally mixed with more or less blood, and accompanied with severe tormina and tenesmus.

In children, dysentery generally commences with the symptoms of ordinary diarrhæa, the discharges being at first fœculent, but soon becoming serous, with an admixture of blood. There is often tension of the abdomen, with pain or tenderness upon pressure along the course of the colon; the skin is generally dry and hot, and in children of a year old and upwards, distinct febrile reaction, with evening exacerbations, is often present, with redness of the tongue and increased thirst; nausea and vomiting are occasionally observed, but are seldom frequent or severe, unless the stomach is the seat of inflammation. The discharges from the bowels become, at an early period of the disease, very frequent, but small in quantity, and composed entirely of a little bloody mucus. They are generally preceded by more or less tenesmus, and attended and followed by tormina.

There is seldom any appearance of fæculent matter in the stools, though occasionally it is passed in hardened masses of various sizes mixed with blood and mucus. If the disease is not arrested, the anus becomes red, hot, and exceedingly painful—and the abdomen hot, swollen, and tympanitic, and often affected with severe pain, or is excessively sore to the touch; the surface of the body becomes cool, and the extremities cold; the discharges from the bowels become dark coloured and offensive; great prostration of strength ensues, and the patient exhibits all the symptoms of chronic intestinal

disease. The mouth often becomes affected with apthæ, which like-

wise occasionally appear about the verge of the anus.

Colitis may terminate, at an early period, by the intensity of the inflammation, but, in general, it runs a protracted course, and the patient sinks from extreme prostration; or a state of coma ensues, and

death is preceded by symptoms of encephalic effusion.

The appearances upon dissection differ in nothing from those that occur in cases of enteritis, excepting in their seat; the mucous membrane of the colon and rectum is affected with red elevated patches or striæ; with friability or softening of the tissue, at the part where they are situated. The surface of the colon and rectum are occasionally covered with filaments, varying in size, of a curd-like matter. Enlargement, inflammation and ulceration of the muciparous glands and follicles are very commonly met with; gangrenous ulceration is occasionally present, and in chronic cases especially, thickening, with a dark purple, or slate colour of the mucous membrane of the colon or rectum, to a greater or less extent.

Dr. Crampton has observed, in cases of children who died of dysenteric symptoms, the mucous membrane of the intestines, in many places, highly vascular, and covered with granulations of a yellow, or dirty yellow colour, as if from a coating of wax; in several, ulceration had taken place; these ulcers were disposed in patches, with well defined edges. In cases that terminated favourably, a quantity of yellowish, branny scales, was seen floating in the discharges from

the bowels, like minute portions of wax from honey comb.

Colitis would appear, in the majority of cases, to be the result of sudden transitions of atmospherical temperature, particularly the sudden change from warm and dry, to cold, damp weather. It is most prevalent during the latter part of summer, or commencement of autumn, when the days are hot, but the nights chilly and damp. It is apt to prove endemic in unhealthy localities, especially those favourable to the production of intermittent and remittent fevers, and often prevails epidemically with fevers of a catarrhal character. A few days of cool, rainy weather, occurring in the summer, will often cause the prevailing bowel complaints of children to assume a dysenteric character.

Colitis may, however, be produced by the same causes which give

rise to inflammation of other portions of the alimentary canal.

In the treatment of colitis, the same general directions are applicable as in the other intestinal inflammations. All solid, stimulating, and indigestible food should be avoided. The patient may be allowed to take pretty freely of mild mucilaginous drinks; but even with these he should not be allowed to overload his stomach. The free use of buttermilk has been found advantageous, in many cases of dysentery in children. (Young, of Chester.) The warm bath, and warm fomentations or cataplasms to the abdomen, are equally beneficial here, as in cases of enteritis. Leeches should be applied, along the course of the colon, in numbers, proportioned to the

violence of the disease, and the strength and age of the patient, and repeated, if, after their first application, the symptoms remain without considerable abatement. By some practitioners, leeches are directed to be applied to the verge of the anus; occasionally, this will be found to produce a very favourable impression upon the symptoms of the case; but, as a general rule, we cannot recommend the application of leeches to this part; we have occasionally found the hæmorrhage produced by them, to continue for some time after their removal, and to be, with difficulty, controlled. In cases, in which symptoms of gastritis are present, leeches should also be applied to the epigastrium. In robust children, over one year of age, when the disease is accompanied by symptoms of any degree of intensity, blood may be taken from the arm.

In regard to the use of internal remedies, there exists a very great diversity of opinion, among practitioners. To the common practice of giving small and repeated doses of castor oil, either with or without an addition of laudanum, we are decidedly opposed; we have seen much injury result from it, and cannot understand the principles, upon which the treatment is founded. From the administration of small doses of calomel, in combination with ipecacuanha, we have derived the best effects, and believe that a small portion of extract of hyosciamus, agreeably to the plan pursued by many of the German physicians, forms an admirable addition. The relief produced by this combination, is often prompt and considerable, while a favourable change is produced, in a very short time, in the character of the discharges.

^a R.—Calomel. gr. iv. ad xij. Ipecacuanhæ, gr. iij.—iv. Ext. hyosciami, gr. vj.—viij. Cretæ ppt. gr. xxxvj.—M. f. pulv. No. xij. One to be given every three hours.

In protracted cases, the application of a blister over the abdomen, as directed in enteritis, we have repeatedly seen productive of very beneficial results. Injections, into the rectum, of a solution of acetate of lead, with or without laudanum, are calculated to allay the tormina and tenesmus, and may be repeated with advantage; we must recollect, however, that much caution is to be observed, in the use of opium and its preparations, in the form of enemata, in the diseases of children. Experience early taught us, that very small portions of laudanum thrown into the rectum, will often produce a degree of narcotism, which would be scarcely anticipated from a similar quantity given by the month; the same fact has been noticed by other practitioners. (Billard, Stokes.)

As soon as the more acute symptoms of the disease have been subdued, we are in the habit of giving the acetate of lead, in the dose of one grain, combined with a third of a grain of ipecacuanha, one grain of extract of hyosciamus, or a twelfth of a grain of opium, and a sixth of a grain of calomel, repeated every three hours, and have seldom been disappointed in effecting by it the entire removal of the disease.

In chronic cases of colitis, the same treatment is applicable, as in

chronic diarrhoa. The spirits of turpentine will, in such cases, be

often found a very valuable remedy.

During convalescence from colitis, more especially, in its more protracted and chronic forms, the vegetable astringents will be found advantageous, in restoring tone to the intestines, and facilitating the

recovery of the patient's strength.

In an epidemic of dysentery that occurred among children, in Washington county, New York, an infusion of white oak bark, blackberry root, and yarrow, in milk, with the addition of sugar, was found to be productive of the best effects. (Cogswell.) The persesquinitrate of iron is also spoken of as a useful remedy, in cases of dysentery occurring, in children. (Williams.)

*R.—Cort. querci. alb.
Rad. rub. villosi, aa, \(\) ss.
Fol. achill. millefol. \(\) iij.
To be boiled in Oj. of milk.
A dessert spoonful, to be given frequently.

10.—Peritonitis:—Inflammation of the Peritoneum.

Inflammation of the peritoneum frequently occurs in children, even from the earliest periods, after birth. In still-born infants, as well as in those who have died a few hours after birth, so frequently has there been found to exist redness and opacity of the peritoneum, with serous or puriform effusions; a coating of coagulable lymph, either in the form of flocculi or membranous shreds; adhesions between the intestinal convolutions and other abdominal viscera, some slight and recent, and others very firm and apparently of long continuance; or tubercular granulations of the peritoneum, that we are perhaps to include peritonitis, among the most common and fatal of the diseases, to which the fætus in utero, or the child immediately after birth, is liable. (Morgagni, Desormeaux, Cruveilheir, Juncher, Andral, Dugès, Veron, Brachet, Legouias, Krantz, Billard, Simpson, King.)

Peritonitis, either in an acute or chronic form, is frequently developed in children, from the period of birth to that of puberty; it is indicated by tension and pain of the abdomen, more or less acute, and invariably increased upon pressure; restlessness, constipation, and

a peculiar contracted and distressed expression of the face.

The pain of the abdomen is constant, and often extremely acute, and the tenderness, in severe cases, is such as to cause the slightest pressure, even that of the clothes, or the coverings of the bed, to be insupportable. The abdomen is commonly tense and swollen, rising in a point towards the umbilicus, (Billard,) and in the course of the disease, tympanitis very generally occurs. The child lies upon his back with his knees drawn up, and exhibits extreme restlessness;—his cries are often constant and acute. The bowels are usually constipated, and the skin dry, but seldom hot. In children of two or three years of age, we have often seen the disease attended with very considerable febrile excitement; the pulse is generally small and frequent,

and there is always great prostration of strength, with a contracted and suffering expression of the countenance, and not unfrequently considerable dyspnæa. As the disease advances, there is generally frequent cructation or vomiting—coldness of the surface, particularly at the extremitics, and often a livid or dusky appearance of the face.

Peritoneal inflammation, occuring in children, requires the closest attention and tact on the part of the physician, to distinguish it from inflammation of the intestinal tube, with which it is often complicated. (Billard.) Peritonitis may be distinguished from pleurisy, by the absence of the physical signs of the latter; and from severe paroxysms of colic, by the pain being continued, and increased upon pressure, while, in cases of colic, the pain is remittent, and is very generally diminished by pressure upon the abdomen.

In acute peritonitis, death often occurs at a very early period, the patient appearing to sink from exhaustion. In very many cases, however, the peritonitis of children assumes a chronic form; when it constitutes probably one of the most insiduous affections of early life, its real character being very often overlooked, and a most injudicious

course of treatment pursued.

In chronic peritonitis, there is generally pain in the abdomen, seldom severe or continued, but occurring most commonly, in short paroxysms; more usually, however, there is only tenderness upon pressure—the patient shrinking or crying out, upon being lifted or handled; the appetite is irregular, or but little affected; the bowels are generally costive, but occasionally, there is more or less diarrhea, alternating with constipation; the child is, in general, peevish, dull, and disinclined to exercise; the pulse is small and quick; and the tongue covered with a whitish or yellowish mucus. The heat of the surface is often somewhat increased, and occasionally the disease is attended with fever of an intermittent form. The face is usually pale or sallow, and the expression of the countenance that of distress. The abdomen is generally more or less distended, and very often exhibits some degree of tympanitis. The emaciation is always considerable; and, in most cases, there is tumefaction of the mesenteric glands. In the early stage of chronic peritonitis, the symptoms are frequently so slight, and of so obscure a character, that but little attention is paid to them by the parents; or the child is supposed to be labouring under worms, the serious character of the disease being entirely unsuspected, and a few, often improper domestic remedies are all that is prescribed. (Wolff, Abercrombie.)

The progress of the disease is generally marked by increasing, and often extreme, emaciation and debility; with small, frequent pulse; hectic fever; night-sweats; often diarrhæa, with thin, dark coloured, and offensive discharges, and the patient finally sinks from exhaustion; in other cases, a scrous effusion takes place within the cavity of the abdomen. The effusion is entirely confined to the peritoneal cavity, being unattended with ædema of the extremities even in protracted cases. (Wolff:) The tumefaction of the abdomen is never to the

extent which occurs in the common forms of acites. Sometimes it is so inconsiderable at first, that it is easily overlooked, especially in young children, in whom there is naturally a considerable prominence of abdomen. The fluctuation of the contained fluid can always, however, be distinctly perceived, by the usual means. Some writers mention a tumefaction occurring at the root of the nose, and causing a peculiar change in the appearance of the child's countenance, as a certain indication of peritoneal effusion. (Wolff, Nasse, König.)

The effusion increases daily in extent, and causes a gradual augmentation in the size of the abdomen; every portion of the body, with the exception of the face, becomes more and more emaciated, and the exhaustion of the patient rapidly increases; the appetite, often, however, continues unimpaired, or is sometimes even increased. The bowels are variable; being at one time affected with diarrhea, at others, constipated, or at least seldom opened. A febrile excitement of an intermittent form now generally occurs, and the patient in a

state of extreme marasmus, sinks gradually into his grave.

In the advanced stage of the more protracted cases, the symptoms are, tumefaction of the abdomen, emaciation of every part of the body, but particularly of the inferior extremities, with extreme debility. The disease, under these circumstances, is very apt to be mistaken for one of atrophy; and the usual irritating and deobstruent remedies, prescribed, under this supposition, serve only to aggravate the symptoms. The real nature of the case may, however, be very readily detected from the previous history, and by the fluctuation discoverable upon an attentive examination of the abdomen; and by an appropriate treatment, it is still possible, in many cases, to pre-

serve the life of the patient. (Wolff.)

The appearances discovered after death, in cases of peritonitis, are, redness and thickening of the peritoneum—serous or puriform effusion—extensive deposition of flocculent matter, with adhesion, more or less extensive, of the convolutions of the intestines, or of these to the surface of the abdomen, or to the other viscera. The intestines are often coated with a thick layer of albuminous matter. The mesenteric glands are generally enlarged, and occasionally in a state of suppuration, or softened, and converted into a curd-like matter. In chronic cases, circumscribed collections of puriform matter, occasionally exist between the convolutions of the intestines. Often the abdomen is distended, with a large amount of whitish or citrine coloured serum, with small, albuminous flocculi, diffused throughout it. The peritoneum is often studded with minute tobercles. The mucous coat of the intestines, presents often the indications of chronic inflammation, particularly ulcerations, to a greater or less extent.

Peritonitis is usually the result of cold:—it may however, particularly in its chronic form, supervene upon slight attacks of any of the acute affections of the alimentary canal, or upon other febrile diseases, as measles, or scarlatina. (Abercrombie.) It may attack children of any age, but is most common in those between two and five

y ars of age. (Wolff.) An acute attack of peritonitis may be the result of perforation of the intestines, from disease of the alimentary canal. In the treatment of peritonitis, a careful regulation of the diet is all important:-thin gruel, or any of the mucilaginous fluids directed in enteritis, may be allowed. As early as possible in the attack, leaches should be applied to the abdomen, especially in the neighbourhood of the umbilicus, in numbers proportioned to the age of the patient, and the extent and violence of the local symptoms; and if the first application does not effect the removal of the pain and tenderness of the abdomen, they should be repeated after a short interval. The warm bath, and fomentations, or warm cataplasms to the abdomen, are remedies from which, if judiciously managed, and perseveringly employed, the very best effects may be anticipated. Internally, it is generally proper to administer, in the cominencement of the attack, a full dose of calomel, followed, in a few hours, by a dose of castor oil, or some simple purgative enema; after the operation of which, small doses of calomel, combined with ipecacuanha and extract of hyosciamus, may be given every three hours. In children over two years of age, affected with a severe attack of acute peritonitis, some blood may be taken from the arm, and, if necessary, followed by leeches to the abdomen. In most cases, in which the symptoms are of any degree of violence, sinapised pediluvia will be found advantageous. After leeching has been carried as far as is thought adviseable, a blister over the abdomen, as directed in enteritis, will often cut short the disease. On the subject of local depletion, it will be proper to remark, that the indications for its employment, and the extent to which it is to be carried, as well as for its repetition, are to be drawn chiefly from the intensity of the local symptoms:—when there is pain or tenderness of the abdomen, leeches should be applied, in proportion to the surface over which it extends; and so long as it continues without decided abatement, the repetition of the leeches should not be neglected. The frequent absence, in peritonitis, of febrile excitement, and the exhaustion of the patient, will often mislead the inexperienced practitioner, and induce him to omit this important remedy, from the early and judicious employment of which, more is to be expected, than from any other. Even in the chronic form of the disease, pain and tenderness of the abdomen call for the employment of leeches, which, if applied in sufficient numbers, will often produce a very marked change in the character of the case. The warm bath, fomentations and blisters to the abdomen, are equally important in the chronic, as in the acute form, as is also the internal use of calomel, with ipecacuanha and extract of hyosciamus. In cases of chronic peritonitis, after effusion has taken place, we have derived the best effects from the addition to this prescription, of minute doses of powdered digitalis. Wolff recommends, in these cases, the digitalis with the bi-tartrite of potass, in small doses, frequently repeated. Even when considerable diarrhæa is present, he states that he has observed, under the use of the

remedy, a gradual abatement of all the symptoms of the disease to take place; and by following it with a course of mild bitters, in conjunction with digitalis, and an infusion of roasted acorns, has, in a large number of instances, effected a perfect cure, even in cases in which, when they were first presented to him, he had almost despaired of

being able, by any means, of saving the life of the patient.

During convalescence from attacks of peritonitis, whether in its acute or chronic form, it is all-important to place the patient upon a well regulated, mild and digestible diet, composed chiefly of farinaceous articles and milk. Flannel should be worn next to the skin, and the arms and legs carefully protected from cold and damp. A change of air, particularly a change from a damp and chilly atmosphere, to one that is mild and dry, will often expedite the patient's recovery.

11.-The Remittent or Gastric Fever of Infancy.

The inflammatory affections of the alimentary canal, occurring in infants subsequent to dentition, are frequently accompanied by febrile symptoms, that usually assume a remittent form, with distinct exacerbations towards evening. This constitutes the remittent fever of infancy—the worm-fever of some writers, and the mesenteric fever of others. It is, in fact, in every instance, either a gastro-enteritis—an ileitis—or an entero-colitis, accompanied with febrile reaction; and were it not that it is noticed as a distinct affection, in almost every work on the diseases of children, we should content ourselves with referring to the account already given, of the inflammations of the digestive organs, for its pathology and treatment; but as this, no doubt, would be considered, by many, a serious defect in our treatise, we shall, in obedience to general custom, devote a section to the consideration of the febrile forms of the several gastro-enteric inflamma-

tions of infancy.

The disease often occurs with great suddenness. A child, apparently in perfect health, shortly after retiring to bed, is attacked with a severe febrile paroxysm:—the skin becomes intensely hot, the countenance flushed, the eves injected, and the pulse quick and frequent. The thirst is generally intense; the tongue dry, and thickly coated on its surface, with a layer of white mucus, but red at its point and edges. There is always great restlessness, and often transient delirium. The patient generally complains of pain over the eyes, and of pain or soreness of the abdomen, which is more or less tender to the touch, and hot. There is not unfrequently nausea, or vomiting of a yellow or greenish fluid, and of a sour or offensive smell. Towards morning, the violence of the symptoms gradually abates; the skin becomes cooler; the pulse less quick and frequent, and the tongue moister; there is still, however, dryness of the skin; the tongue continues coated; the pulse is quicker than natural, and the child exhibits more or less langour and fretfulness; he is without appetite;

the abdomen is still often painful or tender, and the urine scanty and high coloured, often depositing a white sediment. As the day advances, the remaining symptoms abate or disappear; the child becomes more lively and playful, but still exhibits a degree of langour and peevishness, which seldom deceives an experienced eye. Towards evening, there is, in general, restlessness, increased langour, and fretfulness, and a febrile paroxysm soon occurs, as on the preceding night, which is again succeeded by a more or less perfect remission; and the disease, in this manner, with daily exacerbations and remissions, unless cut short by appropriate remedies, runs on for many days,

and often assumes a chronic and very protracted form.

In other cases, and perhaps most generally, the disease commences less suddenly. The child is observed, for several days, to be languid and fretful, with loss of appetite, augmented thirst, and some heat of skin, particularly at night, when he is also restless and uneasy. These symptoms increase, gradually, in intensity, and towards evening, the heat and dryness of the skin become more marked; the thirst and restlessness are greater; the breathing is somewhat hurried; the pulse more quick and frequent:—towards morning, however, the skin becomes again moist and cool, and the patient falls into a short, disturbed sleep. Each night the febrile paroxysms become more and more distinct, and of longer duration, and the morning remissions

less complete. In the remittent fever of infants, the bowels are most generally constipated; in some cases, however, there is diarrhea, or a frequent inclination to go to stool without much being passed. Whenever evacuations take place, they are invariably unnatural in appearance, and highly offensive; being dark coloured, or clay-like; of the appearance and consistency of tar; often mixed with mucus, and occasionally bloody. The vitiated secretions from the intestines, liver, and perhaps the pancreas, are often accumulated in the bowels in large quantities, and when brought away by the action of purgatives, are always highly offensive. Not unfrequently there are frequent evacuations from the bowels, accompanied with violent tormina and tenesmus—the evacuations consisting of little else than mucus, often mixed with blood. The symptoms of such cases are evidently dependent upon inflammation, seated in the large intestines, and constitute the dysenteric fever of some writers.

There is always more or less pain or tenderness experienced upon pressure of the abdomen, which is also often hot to the touch, while the extremities are cool, or cold, even during the febrile exacerbations, when the face is flushed, and the residue of the body dry and parched. The patient usually lies upon his back, with his knees drawn up—cries frequently, and exhibits that peculiar expression of countenance, indi-

cative of abdominal distress.

The breath, from an early period in the attack, has a peculiar sickly odour, and often becomes decidedly offensive. The stomach is occasionally very irritable, and rejects, immediately, every thing taken

into it—frequent vomiting is not unusual. The tongue becomes, as the disease progresses, more coated, dry, and pointed. The breathing is often quick and hurried, and a short, hacking cough, is a very frequent symptom. The child is often observed to pick at his nose,

or lips, or at the corners of his eyes, or his fingers.

Infantile remittent fever often assumes a very chronic form; the exacerbations are of longer duration, but marked by symptoms of less intensity, than in the more acute attacks of the disease; the remissions are also less distinct. The abdomen is usually tender and hot, and generally tympanitic; the bowels are often affected with diarrhoa, and the dejections are always unhealthy in appearance, and fortid. The tongue is thickly coated upon its upper surface, with a yellowish or brownish mucus, and red and dry at its point and edges; the teeth are often covered with sordes, and the lips parched and cracked; the urine is scanty and high coloured, throwing down a copious white sediment, particularly during the remission; the skin is dry, harsh, and of a sallow or dirty hue; the countenance is contracted and wrinkled, presenting the appearance of premature old age. The appetite is often nnimpaired, and in some cases it is even voracious; in general, however, it is altogether lost; the child is very generally affected with a short, hacking, and frequent cough. Most commonly there is urgent thirst. There is always more or less fretfulness, and the usual indications of suffering; and the patient exhibits a disposition to pick, almost constantly, at some portion of its face or body, or at the bed-clothes, or face and arms of its attendants. If there be an accidental pimple on the skin, this will usually be picked until a sore is produced, the edges of which are still more eagerly attacked, so that the fingers are constantly stained with blood. (Locock.) This picking, is, by many, considered as one of the diagnostic symptoms of infantile remittent fever;—it is, however, a common phenomenon in all the chronic affections of childhood, and is often observed when no disease whatever is present. The emaciation and prostration of strength, are almost always very considerable. In the advanced stages, the child is sometimes affected with a species of stupor, in which it remains for hours, as in a dose, with half-closed evelids, it is however, readily aroused, but quickly falls into it again, when undisturbed. This condition is often mistaken for that resulting from effusion in the brain; there is, however, no increased heat of the head, no affection of the pupil, nor any of the other symptoms that are characteristic of effusion within the cranium. of the brain may, however, occur, either in the acute or chronic form of the remittent fever of children, and give rise, if neglected, to tubercular meningitis, with serous effusion, or to acute meningitis. other cases, the respiration, which has been hurried from the first, owing, perhaps, merely to increased circulation through the lungs, becomes laborious, a troublesome short cough, also appears, and very frequently, auscultation will evince a more or less extensive inflammation of the bronchial mucous membrane; and if the disease be not subdued,

wheezing, expectoration, and the other symptoms of bronchial inflammation, or of a tuberculous condition of the lungs will ensue. Sometimes the child appears to be recovering for a few weeks, and then relapses; during these remissions, he gains flesh and strength, but the abdomen remains tumid, and the bowels irregular; and these alternations of improvement and relapse may continue until the mesenteric glands become enlarged, or serous effusion takes place in the abdomen. The emaciation now increases; the exacerbations of fever are entirely confined to the night, and are followed towards morning, by profuse perspiration, and a complete intermission; the appetite is occasionally voracious—the patient, in fact, presenting all the symp-

toms of tabes mesenterica. (Mackintosh.)

The duration of infantile remittent fever, will depend, in a great measure, upon the character and extent of the lesions of the intestinal canal, by which it has been produced, the constitution of the patient, and the treatment pursued. In many cases, an appropriate treatment, commenced in the early stage of the disease, will effect its entire removal in a few hours; in other instances, however, a cure is less easily effected; and in children of a strongly marked lymphatic temperament, there is a very great tendency to the development of tubercles in the lungs, of a diseased condition of the mesenteric glands, or of tubercular meningitis or peritonitis, the termination of which cases is very generally fatal. Death may take place at an early period, from the extent of the intestinal inflammation, or, in chronic cases, the child may sink from mere exhaustion. Even, however, in the most protracted cases, attended with an extreme degree of emaeiation and debility, by an appropriate treatment, a complete recovery may often be effected. Frequent relapses, which are liable to be produeed, by slight errors in diet, exposure to cold or damp, or over exertion, produce a chronic form of the disease, which is particularly unmanageable, and seldom permanently removed.

The lesions discovered after death from infantile remittent fever, vary, according to the longer or shorter duration of the disease. They are chiefly inflammation, more or less extended, of the digestive mueous membrane—in some instances, of the stomach and upper portion of the small intestines—in most instances, of the ileum, at its lower part, and in some eases, of both the ileum and colon. mucous membrane is either reddened in patches, points, or striæ, and is generally thickened and softened, or ulcerated. The muciparous glands are very generally inflamed and ulcerated. The mucous membrane is often covered with a thick layer of tenaceous mucus. Dark, livid patches of the lining membrane of the small, but more generally of the large intestines, are frequently met with, and occasionally, gelatinous softening, with perforation of all the coats. mesenteric glands are very generally enlarged-sometimes enormously so; sometimes in a state of suppuration, but more commonly converted into a cheesy matter. Peritoneal inflammation is occasionally observed, and, in chronic cases, the peritoneum is sometimes thickly studded with tubercles. In some cases peritoneal inflammation seems to have been the immediate cause of death, and to have resulted from perforation of the intestines. The liver is generally enlarged, and in a state of extreme hyperæmia; sometimes changed in texture, and at others times, of a lighter colour than natural. In the brain, there is often more or less effusion, between the membranes, and into the ventricles, with opacity of the arachnoid membrane, and tubercles of the substance or meninges. In the thorax, the most common morbid appearance is increased redness of the bronchial mucous membrane; the bronchial ramifications, and air-cells being filled with mucus. The lungs occasionally display traces of inflammation; and in protracted cases, tubercles in the lungs, and upon the surface of the pleura, are fre-

quently met with. (Mackintosh, Armstrong.)

Infantile remittent fever is evidently, in every case, the result of irritation or inflammation, most commonly sub-acute, of the digestive mucous membrane; inflammations of the other organs so frequently met with, being mere complications, occurring in the course of the disease. This is rendered evident, by the phenomena which are described as constituting infantile remittent fever, all of which, upon a close analysis, will be found to point to the mucous surface, as the original seat of morbid action. (Marsh, Stokes, Mackintosh, Armstrong, Locock.) The result of numerous autopsies, have placed this fact beyond the possibility of doubt; it is therefore, chiefly to a morbid condition of the mucous membrane of the alimentary canal that we are to look for the pathology of the disease; and to the removal of this condition, are our remedies to be primarily and mainly directed; upon this depend the febrile phenom-

ena, and with its removal will they disappear.

The stomach being the seat of inflammation, this, which is generally of a sub-acute character, will be denoted by pain on pressure at the epigastrium; by a vivid redness of the point of the tongue, extending some distance round its edges; generally there is a loathing of food; and nausea, retching or vomiting are sometimes observed. If the inflammation exists in the mucous membrane of the small intestines, it will generally be seated in the lower part of the ileum. We shall have then the same appearance of the tongue, with the papillæ more prominent and distinct than natural. Pain will be excited by pressure lower down than when the inflammation is scated in the stomach; the discharges from the bowels will be more mucous than natural, often resembling thin oily paint, mixed occasionally with distinct masses of mucus. Nausea, retching or vomiting rarely occur; if they do, not only the ileum, but the stomach, and upper portion of the small intestines are also affected. When the inflammation is situated in the large intestines, its seat is almost always at the upper part of the colon, and the lower part of the ilcum. The tongue will then present the same appearance, and the same tenderness of the abdomen, as in inflammation of the small intestines, and the discharges from the bowels will consist of a muddy, loose, offensive fæculent

matter, or of a little mucus mixed with blood. The abdomen, in all these cases, being more or less tense and hot. Sometimes there is a torpid condition of the colon, with great distension, from retained fæcal matter. When the liver is affected, we have pain or tenderness when pressure is made in the region of that viscus, and the discharges from the bowels will show a deficiency, or depraved state of the biliary secretion. From the sympathy which exists between the skin and mucous membrane of the digestive organs, an irritation is experienced either at the external termination of the mucous orifices, or upon some part of the surface, and to remove or abate this, the child is prompted to pick incessantly at the nose, mouth, eyes, face, &c.—

(Mackintosh.)

The presence of worms in the intestines, which we have already seen to be a frequent occurrence in nearly all the disorders implicating the digestive organs, has, perhaps in no instance, any agency in the production of either of the phenomena of the disease. (Butter.) Even the various symptoms supposed to indicate the existence of worms, many of which are present in cases of remittent fever occurring in infants, are, probably in every instance, the result of intestinal irritation, totally independent of the worms, though capable of being aggravated by the latter, when in large numbers. There is a certain sense in which worms may be said, however, to produce remittent fever. A child is affected with langour, has an irregular appetite, and a sluggish or disordered state of the bowels—is morose and peevish—rubs his nose or mouth—occasionally vomits, and starts in his sleep; he is immediately pronounced to be affected with worms, and drastric purgatives, and other irritating remedies* are prescribed; should a worm—no unfrequent tenant of the bowels in early life—be discharged, the previous opinion is supposed to be confirmed; and, too often, without considering whether the symptoms under which the child labours have been initigated or aggravated by the remedies, their use is persevered in, with the view of removing entirely the supposed cause of its sufferings. Even should no worms appear in the stools, the reasoning is still the same; the child has worms, but the means employed have not been sufficient for their evacuation; prescriptions still more active are resorted to, and continued until the appearance of symptoms of an alarming character point out the necessity for their discontinuance; and the physician is then called upon to treat a case of acute or chronic inflammation of the digestive organs, with febrile symptoms of a remittent form.—(Wolff, Stokes.)

The causes of infantile remittent fever, are the same to which we have, in the preceding sections, referred the production of gastro-intestinal inflammation. In perhaps the majority of instances, it is the result of too much, improper, or unwholesome food. Long habits of

^{*} Aloes, tansey or garlic, dissolved or infused in gin, we have frequently known to be given to children for many days in succession, in such cases.

indulging in stimulating and indigestible articles of food-pastry, confectionary, crude fruit, and vegetables, and various compound dishes-or swallowing food rapidly, and, consequently, without due mastication, are enumerated by writers upon the subject, as the usual causes of the disease. According to the experience of Locock and Merriman, the acute form of gastric remittent, is most prevalent about the period of Christmas, when the rich and indigestible fare of the season is partaken of to excess by children, who are too often encouraged in this by the foolishness of parents and friends. (Merriman, Locock.) The disease may likewise be produced by cold and damp, and it hence very frequently occurs towards the close of summer, and early part of autumn, when these transitions are most frequent, while the system of the child is more liable to be affected by them, in consequence of the over stimulation of the skin, and of the organs which sympathise most closely with it, by the heat of the preceding season, and which often still continues during the middle portion of the day, and contrasts strongly with the coolness, often chilliness, of the

Teething and worms have been generally set down among the producing causes of infantile remittent fever; the first, which is usually attended with increased irritability of the digestive mucous membrane, particularly of its muciparous glands and follicles, no doubt often predisposes to inflammation of the alimentary canal, and of course, to remittent fever; worms, however, we suspect to be very seldom

concerned in its production.

Among the more common causes of the disease, is, the neglect or mismanagement of the bowel affections of children generally; more especially the abuse of purgatives on the one hand, and of stimulating remedies and diet, on the other. In its chronic form, it is frequently observed to follow many of the ailments to which early childhood is liable, such as hooping-cough, measels, scarlet fever, &c., chiefly, perhaps, because, in the course of these diseases, the digestive organs often become the seat of disease, which is overlooked or maltreated; or, in the anxiety to restore strength, nourishing diet is too early and too abundantly supplied. (Locock.)

By some, infantile remittent fever is said to prevail occasionally as an epidemic, or, more properly speaking, as an endemic. Of this there can be little doubt. By some it is supposed, particularly in its low, typhoid or chronic form, in other words, when connected with sub-acute inflammation and ulceration of the mucous glands and follicles of the intestines, to be propagated by contagion. The production of disease of the bowels in children by an impure and confined atmosphere, particularly when combined with a neglect of personal cleanliness, and unwholesome diet, has been too much overlooked. We have known nearly all the children of a family, or neighbourhood, to become affected, from this cause, with some of the worst forms of intestinal inflammation, accompanied with the phenomena ascribed to the low or typhoid remittent fever, the progress of which could only

be stayed by removal from the infected air in which it was generated, by an improved diet, and a strict enforcement of cleanliness of person and clothing. It is no doubt under such circumstances that the disease has been reputed contagious; in a strict sense, however, we do not

believe that the disease is ever propagated by contagion.

The treatment of infantile remittent fever will be readily understood from what has been advanced in relation to its pathology. Dependent for its production and continuance upon inflammation, more or less extensive, and of an acute, sub-acute, or chronic character of the mucous membrane of the alimentary canal—it is to the removal of this inflammation, that our remedies must be directed; and just in proportion as they are adapted to effect this object, will be our success in the cure of the disease.

A proper regulation of the patient's diet is all important: in the more recent and acute cases every species of food should be withheld; the child may be allowed, however, some cold mucilaginous fluid as a drink—any of those directed in gastro-enteric inflammation will be proper—but even these, the patient should not be allowed in such quantities as to unduly distend the stomach; this is particularly necessary, if the case be attended with symptoms of gastric disease. In the more protracted and chronic forms of the fever, in addition to the mucilaginous drinks, a moderate portion of some plain farinaceous food, with or without the addition of milk, will be proper, given at proper intervals. Occasionally, in very chronic cases, we have found beef tea, chicken water, or plain mutton broth with rice, to agree better with the stomach, and to produce a less amount of irritation than farinaceous preparations. On this point, of course, the judgment of the physician, guided by a knowledge of the pathology of the discase, and the particular circumstances of each case, must be exercised. The only general rule that can be given, is, to prohibit every article of diet of a stimulating or indigestible character, as well as all solid food; and not to allow even that which is proper, to be given at improper hours, or in too great quantity.

In recent cases, the treatment may be commenced by the administration of a full dose of calomel, with magnesia, (five grains of each,) which should be followed, in the course of a few hours, by an appropriate dose of castor oil, or a simple laxative enema. This will generally bring away a large amount of undigested matter and vitiated secretions, with a manifest improvement in the condition of the patient. As to the propriety of repeating the purgative, this will depend upon the particular circumstances of the case; if the attack has been evidently the result of excess in cating, or improper food, the cvacuation of the undigested matters with which the intestines are, in such cases, often loaded, and which are a constant source of irritation to the mucous membrane, is important; if, therefore, pretty free discharges have not been produced by the first purgative, an additional dose of castor oil or of magnesia and rhubarb, may be given on the succeeding day. The repeated administration of active purgatives, so generally recommended in this disease, and their continuance from day to day, until healthy stools are procured, is founded upon incorrect views of the pathology of the disease, and is rather calculated to augment, than to remove, its more prominent and dangerous symptoms. We are persuaded, however, that the administration, at short intervals, of alterative doses of calomel, combined with chalk and ipecacuanha, is a good practice in infantile remittent fever. Calomel in this form and combination, keeps up a gentle laxative action upon the bowels; while under its use the discharges become more natural in appearance, the skin softer, the tongue more moist and clean, the pulse slower and more developed, the exacerbations shorter, and the remissions more perfect. In the more protracted and chronic cases, we are accustomed to add to each dose a small portion of extract of hyosciamus, which has the advantage of

allaying irritation without binding the bowels.

In every case in which the exacerbations of fever are marked by symptoms of any degree of intensity, the abstraction of a few ounces of blood from the arm, if the child is over two years of age, will be advisable; or leeches may be applied to the abdomen, in numbers proportioned to the violence of the symptoms and age of the patient. The application of leeches will be demanded whenever there is pain or tenderness upon pressure, with tension and heat of the abdomen; when well timed, and in sufficient numbers to reduce the local inflammation, they are the remedy upon which most dependence is to be placed, in the treatment of these cases. Even in the protracted and chronic forms of the disease, pain, heat, and tension in the epigastric, umbilical, or hypogastric regions, or in either hypochondrium, should be the signal for their application in numbers adapted to the circumstances of each case. Many have urged that the disease is one attended with so much exhaustion, and so liable to be protracted, that abstraction of blood should be avoided; but it will generally be found that an active treatment, pursued judiciously, in the early and acute form, will be the one best adapted speedily to arrest the symptoms, and prevent the exhaustion consequent upon the more protracted or chronic form. (Locock.) The intermissions will usually become more distinct, the tongue moister, the skin softer and more pliable, and the evacuations more regular and natural, after the local abstraction of blood; and at a later period, when the indications for its use are present, it is often followed by an improvement in the pulse, the skin, and in the appearance of the stools, the very reverse of those from increased depression.

It has been suggested, and with a good deal of plausibility, that the intestinal torpor that so frequently exists in the disease, is often the result of hyperæmia of the brain; and hence it is that an efficient abstraction of blood almost always increases the susceptibility of the

bowels to the action of mild aperients.—(Eberle.)

In every instance the tepid or warm bath is, as in the case of gastrointestinal inflammations generally, a very valuable remedy. When the skin is hot and parched, sponging the entire surface frequently with tepid water, will often produce a pleasant coolness and moisture, and relieve entirely the restlessness of the patient. In the intervals of the paroxysms, as well as in those cases in which the temperature of the surface is not increased or is reduced, the warm bath by immersion should be preferred. Fomentations to the abdomen, or warm emmolient cataplasms, perseveringly employed, as well as warm or sinapised pediluvia, especially when there is a tendency to coldness of the extremities, or irritation of the brain, will always be found to produce a decidedly beneficial effect. In protracted or chronic cases, blisters to the abdomen, as directed in enteritis, will be proper, and, in general, are followed by a marked improvement in the condition of the bowels.

When delirium, increased heat of the head, aversion from light, an injected state of the eyes, or stupor ensues, a few leeches may be applied behind the ears, and cold washes or lotions to the scalp, while at the same time, stimulating pediluvia or frictions to the lower extremities are employed. Cough, and hurried laborious respiration, will demand mucilaginous drinks, blisters to the thorax, and, if the symptoms of bronchial inflammation are distinctly marked, and of any degree of severity, leeches about the clavicles should be applied. In these cases, small doses of calomel, ipecacuanha, digitalis and extract of hyosciamus will be found a useful remedy.^a

*R.—Calomel, gr. iij. ad iv. Ipecac. pulv. gr. iij. Digitalis pulv. gr. iij. ad iv. Ext. hyosciami, gr. iv. ad viij.—M. f. chart. No. xij. One to be given every three hours.

In the chronic forms of infantile remittent fever, attended with tympanitis, and vitiated mucous, or dark offensive discharges, one of the remedies from which we have derived the most decidedly beneficial effects is the spirits of turpentine; it may be given in doses of from ten to fifteen drops, three or four times daily, in a little sugar, or in the form of a mixture, as recommended in cases of chronic diarrhæa. It has not only the effect of exciting the bowels to contract and expel the gas, but it generally exerts an evident beneficial influence upon the morbid state of the intestinal mucous membrane, allaying irritation, and producing a decided improvement in the excretions. (Eberle.) We have employed this remedy very extensively, in all the chronic affections of the bowels in children, and have always had occasion to be pleased with its operation. If there be evidences of serous effusion within the abdomen, with scanty secretion of urine, the same treatment should be pursued as directed in cases of chronic peritonitis.

The treatment of those cases attended with enlargement of the mesenteric glands, differs in nothing from that already laid down. As soon, however, as the symptoms of intestinal inflammation are reduced, the administration of some of the milder preparations of iodine may be entered upon, with the inunction of the same, in the form of ointment, about the groins and over the surface of the abdomen; the hydriodate of potassa, is the preparation we have generally employed, and occasionally with very great advantage.

In all cases, after the symptoms of the disease have subsided, the

discharges from the bowels become more regular and healthy in appearance, the tongue cleaner and more moist, some light bitter, as a weak infusion of cinchona or calomba, may be given, in combination with the sulphuric or hydrochloric acids, and, as convalescence advances, the sulphate of quinia, the tincture of the sesquichloride or the persesquinitrate of iron, the bowels, at the same time, being kept regularly open by gentle aperients, and the diet slowly and cautiously improved. By this course, aided by the tepid or warm bath, daily repeated, and followed by frictions to the surface, the functions of the digestive organs will be very rapidly improved, and the strength of the patient promptly restored. As soon as the patient is able, gentle exercise in the open air, at first passive, and subsequently of a more active kind, will confirm the cure. When the case has been of a protracted character, change of air will often produce the most beneficial effects.

Great caution, however, must be observed, not to commence too early upon the use of tonics, or to improve too rapidly the diet. During the stage of convalescence the utmost circumspection should be observed, as well in regard to the quantity, as to the quality of the food that is allowed. A slight excess, a premature indulgence in solid food, or the use of that which is indigestible, or has any tendency to oppress the stomach, will endanger a serious relapse. The surface of the body should be carefully guarded from the impression of cold or damp, by appropriate clothing, and due precaution; and the proper temperature, dryness, and purity of the air of the apartment occupied by the convalescent, should be maintained by due ventilation, and by artificial heat when necessary.

SECTION II.

DISEASES OF THE RESPIRATORY ORGANS.

1.-Asphyxia.

Cases of still born children are very common: and although it may not be strictly correct to say that the infant is, in such cases, invariably in a state of asphyxia, yet the term seems as little exceptionable as any other, provided proper attention be paid to the cause by which the establishment of the respiratory function is prevented. This may, in some cases, arise either from the imperfect development or malformation of the heart and circulatory organs, of the lungs and respiratory apparatus, or of some portion of the nervous system; or from the extinction of life in the fætus, previous to, or during parturition, either from congenital disease, or from injuries inflicted upon it during its passage through the pelvis. In all these cases, as well as in those in which the powers of life in the fætus, are too feeble to carry on the

functions of the organism in the independent state of existence, no hopes can be entertained of a resuscitation being effected, or the duration of life being prolonged, by any course of treatment. But, in a large proportion of the cases in which the infant is apparently dead born, there is merely a suspension of the respiratory function, and by proper means, persevered in for a sufficient length of time,

complete resuscitation may be effected.*

The most common causes of aspliyxia in new born children, are; tedious and protracted labour, from defective uterine efforts, rigidity of the os uteri, or a disproportion between the size of the fætal head and the dimensions of the pelvis; the cord being twisted round the neck of the infant, or around some other part of its body; the cord, from its prolapsus being subjected to pressure between the head of the child and walls of the pelvis; the placenta becoming partially or entirely detached, before the expulsion of the child; the os uteri or the constrictor muscle of the vagina being spasmodically contracted around the neck of the child, as is apt to occur in a first labour, when ergot is injudiciously administered to expedite delivery; the child being born with the face invested with the membranes; the mouth and fauces being filled with viscid mucus, or, as sometimes happens, the tongue falling backwards, and closing up the fauces; or, finally, the child being exceedingly feeble and exhausted. (Wildberg.) Asphyxia is likewise observed in cases of very rapid delivery, when the infant is protruded by a quick succession of severe uterine contractions. (Velpeau, Jörg.)

Asphyxia in new born children, may occur after birth, and even after the child has breathed and uttered some feeble cries, when, from the ignorance, or the wilful neglect of the practitioner or attendants, the necessary means are not adopted for the preservation of its life; and occasionally, from causes, the nature of which it is very difficult

to understand.

In some cases of asphyxia, the infant, when born, is pallid, with open and flaccid mouth, relaxed limbs, and with only a feeble, obscure pulsation, sometimes none at all, at the heart or in the cord; in others, the face is swollen, livid or purple, with or without pulsation of the fætal heart, or of the cord; occasionally, however, the cord is tense and pulsates strongly, while the pulsation at the heart is slow and feeble.

The state of asphyxia may be more or less complete. The fœtus may neither cry nor respire, and present no appreciable motion of the umbilical arteries or heart, being, to all appearances, actually dead; or, while no effort at respiration occurs, the heart and cord may pulsate with more or less vigour, while, again, a few ineffectual respira-

^{*} In the 15 years preceding 1840, of the 110,526 children born, 4647, or about 4.25, were dead. How many of these latter were premature births, or to what particular cause the death of the fœtus was owing, we have no means of ascertaining. The law requires that in every instance in which the fœtus has arrived at the term of six months, or at the termination of the full period of utero gestation, and is born dead, it shall be reported as a case of still birth.

tory efforts may be made, or even faint cries may be uttered, and then

a complete state of asphyxia ensue.

All the causes to which the asphyxia of new born children is to be immediately referred, have not been investigated with sufficient accuracy. Some are, it is true, very evident, being causes which directly impede the passage of the air into the lungs, as the existence of a quantity of thick, tenacious mucus in the mouth, fauces or windpipe; or which prevent the dilatation of the chest and other respiratory movements, by suspending inervation—as the apoplectic condition of the brain, with which the infant is frequently born; but in those cases in which there exists no impediment to the passage of air into the lungs, and no undue distension of the vessels of the brain, it is difficult to assign the real cause for the non establishment of respiration. Some have supposed it to arise from a state of extreme debility; others from anemia, or from the functions of the placenta having become suspended a short time previous to delivery, by which the condition of the blood is so changed, that it can no longer produce that degree of stimulation of the brain and other organs, which is essential to the proper performance of their functions, and which must necessarily cause the death of the child, unless respiration be promptly established by artificial means, and the due vitalization of the blood, is in this manner effected. This latter, which is the opinion of Velpeau, seems to us the most plausible.

When a new born child opens its eyes, moves its limbs, and exhibits a few imperfect respiratory efforts, a smart slap upon the buttocks, or a few drops of cold water sprinkled upon the chest and abdomen, will very generally cause it instantly to breathe, and to cry out lustily. In all cases, immediate attention should be paid to remove at once, any viscid mucus which may exist in the mouth and throat. This may be readily done with the finger, surrounded with a piece of soft linen. The child should be subsequently placed upon its side, in such a position that any of the mucus that remains may flow from the mouth, at the same time that its entrance into the trachea is prevented. The turning the child upon its face, slapping it between the shoulders, and gently shaking it, as recommended by a few highly respectable writers, "with the view of disengaging any mucus that may be lodged in the trachea," are procedures that we cannot believe to be either safe or

useful.

In all cases in which the asphyxia is unaccompanied with symptoms of cerebral congestion—a puffy and dark purple or livid appearance of the face—it is not proper to tie the umbilical cord, until its pulsation has ceased, or has become quite feeble. (Levret, Smellie, Baudelocque, Petit, Chaussier, White, Denman, Velpeau, Dewees, Blundell, Rigby.) The premature application of a ligature to the cord has, we believe, in many instances, given rise to asphyxia.

The dashing of a little cold water, or spirits, upon the chest and abdomen, will, in many cases of simple asphyxia, almost immediately excite the respiratory action, with loud and vigorous cries, when the

cord may be divided, and the child suffered to remain quiet, until its

strength is, in some degree, recruited.

The plan pursued by Velpeau, in imitation of Desormeaux, is a very excellent means of rousing the infant from a state of asphyxia. A portion of some spirituous liquor being held for a moment or two in the mouth, is then spirted with force, in the form of a *douche*, upon the breast of the child.

Immersion in the warm bath is often a very successful means of resuscitation in cases of asphyxia. The use of the warm bath in these cases, however, requires some little management, to derive from it any advantage. The object of the bath is to excite the action of the heart and respiratory muscles; if, however, within a very short time after immersion, neither respiration nor circulation ensues, the child should be taken out, as the effect of the bath is then decidedly injurious. (Edwards.) Even when respiration is produced, as it often will be, by the action of the bath, it should not be continued in it over a few minutes; a prolonged continuance in the bath would, by raising the temperature of the infant, render it less capable of enduring the state of asphyxia, and would also prevent the access of the atmospheric air to the surface of the body, which always exerts a very powerful vivifying influence. (Edwards, Kay.) When the child is removed from the bath, gentle friction should be applied to the surface of its body with a warm, dry flannel cloth.

Cold effusion has been resorted to, in cases of asphyxia in new born infants, and there is no doubt, when it is judiciously managed, it may often prove a very powerful and successful means of resuscitation. In two cases, related by Dr. Patterson, of Dublin, the infant was placed in a tub, and three quarts of water, at a temperature of about 60°, were twice dashed over it, strong friction being at the same time applied to the parieties of the chest, active respiration was quickly established, when the infant was removed from the tub, well dried, and wrapt in flannel; in both cases, an entire recovery was effected.

But of all the means that have been employed in the asphyxia of infants, inflation is the one upon which, experience has taught us, that the most confidence is to be placed, if early resorted to, judiciously

practiced, and persevered in for a sufficient length of time.

In inflating the lungs, the mouth of the operator should be applied to the mouth of the child, the latter being first covered with a silk handkerchief, or soft napkin; its nostrils should be closed with one of his hands, while the other is applied upon its thorax. By a moderate, but uniform force of insufflation, the lungs will be very readily filled with air, when the mouth of the operator is to be withdrawn, and gentle pressure made upon the chest, so as to expel the air by which the lungs of the infant have been inflated; in this manner, artificial respiration should be kept up for some time. If the cord be examined at a short distance from the abdomen, it will be often found to pulsate soon after the commencement of the operation, or the heart may be felt to beat beneath the ribs; the first symptom of returning life is,

generally, a tremulous motion of the respiratory organs; the child next makes a feeble attempt to inspire, and the cheeks begin to redden; when these marks of returning life are observed, if the inflation be suspended, the child will frequently be found to make a spontaneous effort at respiration; a deep sigh is the first breath it draws; in a few seconds it breathes again. Now, if on suspending the artificial respiration, the heart continues to beat vigorously, the cord to pulsate, and the respiration to increase in frequency and depth, it need not be resumed. But should the pulsation cease in the heart and cord, and the respiration cease, or become more feeble, it must then be immediately resumed, and this repeatedly, as the case requires—at one time, the natural powers of the child to carry on respiration are to be tested, at another, we support the respiration by artificial means. the efforts at spontaneous respiration increase, ammonia, or cologne water rubbed upon the hand, and held over the mouth of the infant during inspiration, will materially assist the recovery, and has a better effect than pouring stimulants into the stomach. A few smart slaps on the gluteal muscles, will now generally complete the recov-

In favour of the efficacy of artificial respiration, in cases of asphyxia, occurring at or soon after birth, we have the most incontestible testimony. Blundell trusted to it alone, with the aid of the warm bath. Toogood declares that he never found any other means necessary, and believes, that if actively employed, and steadily persevered in, it will, in the majority of cases, be successful. We may add our own experience, which is decidedly in favour of this means of resuscitation. But it must, to be generally successful, be persevered in, until the recovery of the infant is shown to be impossible, by unequivocal signs. Toogood continued it for forty-five minutes, in several cases, before respiration was fully established; and in a communication of Sir James Eyre, in the London Medical Gazette, March, 1840, he refers to a case in which the artificial means were persevered in by him, for from thirty to forty minutes, and to two cases in which they were continued by Mr. Terry, of Northampton—in one for one hour and a half, and in the other, for two hours and a half. Blundell recommends artificial respiration to be practised by means of a tube introduced into the trachea. We have never had any difficulty in effecting it by the mouth alone; this is also the experience of Mr. Toogood; and in the communication of Sir James Eyre, already referred to, he remarks, "I uniformly inflate with my own breath; in this matter, I perfectly agree with Dr. Cape, in a sensible letter of his, which appeared in the Medical Gazette, of October 7, 1837."

In the case of suspended animation, occurring in new born infants, from a congested state of the brain, a somewhat different practice is to be pursued. This form of asphyxia is usually met with in large, robust, plethoric infants, after tedious and difficult labour, where the child has remained for several hours under the direct influence of the uterine contractions, after the discharge of the waters; where a loop of the eord strictures the neck or thorax; or where the cord is itself compressed, by any means, during labour. Its immediate cause is the engorgement or compression of the brain; though the want of a proper revivification of the blood, is in all probability, a frequent cause of this form of asphyxia, as it is of the preceding. (Velpeau.) It is, in many cases, produced by the too carly and injudicious use of ergot.

In the apoplectic form of asphyxia, the countenance, and often the sealp and neck, presents a dark red, or livid and bloated appearance, the lips are swollen, and purple, the eyes prominent, and the surface of

the body warm, red, and somewhat tense.

When an infant is born in this condition, no time is to be lost. The umbilical cord should be immediately divided, and more or less blood, according to circumstances, allowed to flow from it; if the pulsation in the cord has not already ceased, as the blood flows from its cut extremity, very generally the lividity and turgid state of the face and neck disappears, and respiration is very promptly established. When the pulsation of the cord is slow and feeble, inflation of the lungs should be resorted to, in addition to the abstraction of blood. The infant may, at the same time, be immersed in a warm bath to the

the hips, while cold water is applied to its scalp.

In those cases in which the child is born without any indications of life—its face swollen and livid, its body flaccid, and no pulsation perceptible in the cord, or at the heart—notwithstanding there is but little hope that resuscitation can be effected, it ought not to be abandoned, without suitable efforts being made for the establishment of respiration. We are in no instance, hastily to pronounce success impossible. Many a fœtus has been laid aside as dead, which, by a diligent use of proper means, might have been saved. (Blundell.) In the eases referred to, it is seldom that a sufficient quantity of blood can be procured from the cord, upon its division. We have often, however, found the blood to commence flowing, when the infant is immersed in a warm bath, as directed above, its head being, at the same time, washed with brandy and water, and its lungs properly inflated. It has been suggested, with the view of soliciting the flow of blood from the cord, to cut the latter short, and apply, over the navel, a wide-mouthed cupping-glass, furnished with an exhausting syringe. It is supposed that by exhausting the cup, a flow of blood may be obtained from the divided cord, even after the heart has ceased to act. (Eberle.) The suggestion is a very plausible one, and worth a trial. When it is impossible to obtain blood from the cord, Velpeau directs leeches to be applied behind each ear.

It often happens, that after we have succeeded in establishing respiration, the infant remains for many hours in a feeble condition; the slightest fatigue or agitation being sufficient to extinguish life. It is of the utmost importance, therefore, in all cases in which resuseitation has been effected, that the infant be allowed to remain upon the bed, properly wrapped up, in a state of perfect repose, for several

hours, before any attempt is made to dress it.

2. - Coryza.

The simple cattarrh, or inflammation of the mucous membrane of the nares, occurring in infants, has received various appellations. It is usually described, however, by writers on the diseases of children, under the denomination of coryza, gravedo, or snuffles, to which, occasionally, the terms malignant, (Underwood,) or morbid, (Marley,) have been added, to distinguish the more aggravated form of the disease, in which the Schneiderian membrane is affected with diptheritic or exudative inflammation.

The disease, though always troublesome, is in many cases, of little importance, disappearing spontaneously, after a few days; while in other instances, it is productive of considerable suffering and danger to the child. The younger the infant is, in whom it occurs, the more

severe and dangerous it in general proves.

The mucous membrane of the nares is particularly susceptible of irritation, in the early period of life; and inflammation is excited in it often by very slight causes. It is not uncommon to hear an infant sneeze soon after birth, or even immediately on the air coming in contact with the membrane. There often occurs, also, at a very early period, an abundant secretion of mucus, which, in some children, flows constantly from the nose, without apparently being attended by any degree of inflammation.

Coryza may be simple, or complicated with the more or less rapid formation of a pellicular exudation throughout the whole extent of the nasal fossæ; or, it may assume a chronic character, and occasion the death of the patient, by the disorganization which ensues. (Bil-

lard.)

The first indication of the disease is frequent sneezing; the inner surface of the nostrils becomes red, dry, and swollen, and the cry of the infant is altered, from the impediment to the free passage of the air through the nose; a watery, or thin muculent fluid soon begins to flow from the nostrils; in a short time, it assumes a thick, white, opaque appearance, subsequently changing to a yellow, and becoming finally purulent. The child sleeps with its mouth open; the respiration is difficult and noisy; and instead of the usual râle, a whistling sound occurs in the nasal fossæ. This sound becomes greater, and the difficulty of respiration increases, in proportion as the mucus of the nose becomes thicker and more abundant. (Billard.) In severe cases, the child experiences great difficulty in suckling, from its inability to breathe through the nose; and as the discharge, by drying at the orifice of the nostrils, often completely closes them, every attempt to take the breast, is attended with the utmost anxiety; the countenance of the infant becomes flushed, and it is obliged, instantly, to quit the nipple, to prevent suffocation. Its restlessness and cries, as well as the expression of its face, indicate the utmost distress and suffering; which are increased by its sense of hunger, and the impossibility it experiences of satisfying it. Worn down by fatigue, pain, and deficient nourishment, the child may perish at an early period, from inanition; or, the irritation being transmitted to the brain, extreme prostration and drowsiness may ensue, and sooner or later terminate in death; or death may be preceded by convulsions or acute meningitis, quickly terminating in effusion. In the more prolonged, or chronic form of the disease, the mucous membrane of the nares may become softened and destroyed, or the seat of an extensive, ill-conditioned ulceration.

The difficulty of respiration in coryza, is always greatest in those cases, in which the inflammation of the nasal mucous membrane gives rise to a pseudo-membranous exudation; in such cases, also, the tonsils and fauces occasionally present a swollen and dark red, appearance, their surface being covered with ash coloured specks, terminating, in some cases, in extensive ulcerations. (Denman, Schmidt.)

In violent cases, death may occur in three or four days, while in other instances, the symptoms are mild, from the commencement; the inflammation very rapidly abates, the secretion gradually lessens in quantity and in consistency, the respiration improves in proportion,

and in a few days every symptom of the disease disappears.

The danger, in cases of coryza, is always in proportion to the degree of tumefaction of the mucous membrane of the nares, and to the abundance and tenacity of the excreted fluid. When the inflammation is slight, and the mucus of the nose is only a little more abundant and ropy than natural, the difficulty of respiration is but slight, and the inflant is able to suck without much difficulty. All other things being the same, it is always more serious and dangerous, in proportion to

the tender age of the patient. (Billard.)

The appearances discovered after death, in those who have fallen victims to this disease, are, increased redness, with thickening and friability of the mucous membrane, throughout the whole extent of the nasal fossæ, which is generally thickly coated with opaque tenaceous mucus—in some cases, small patches of a pseudo-membranous exudation are scattered over the surface of the membrane; in other instances, the membranous concretion covers the whole interior surface of the nares, and extends from the superior part of the glottis, upwards, towards the sinus and cornua of the nose, the mucous membrane beneath, to which it firmly adheres, being much tumefied, and of a vivid red colour; softening of the mucous membrane, and extensive ulceration, are present, in many cases. In chronic cases, various morbid affections of the alimentary canal, lungs, and brain, are frequently met with.

The disease is usually the result of exposure to a cold or damp atmosphere, or of neglect in changing the diaper and clothing of the infant, when they become wet with the urine. Billard enumerates, among its common causes, exposure to a strong fire, and particularly, to the light and heat of the solar rays. When children are taken out, he remarks, for the benefit of the air, on the return of spring, it is

almost always observed, that they sneeze, and experience a discharge from the nose; we apprehend, however, that the exposure to an atmosphere many degrees colder than that to which the child has been accustomed, has more to do in the production of coryza in children, on their first being taken out in the spring, than the action

of the sun's rays.

In light attacks, little treatment is necessary beyond the avoidance of the occasional causes of the disease, with proper clothing, and confinement to rooms of a warm, equable temperature. The use of the warm bath, daily, will be proper, however, in most cases, with the occasional use of some mild aperient, as castor oil, or magnesia and rhubarb. In more violent cases, the application of a few leeches to the root of the nose, will be advisable, with some gentle diaphoretic. In some cases we have found the administration of a few grains of calomel, followed by a dose of castor oil, highly advantageous. A small blister to the nape of the neck, will often produce very considerable relief. (Marley, Schmidt, Billard.) The infant should not be put to the breast during the stoppage of the nostrils, but the nurse's milk should be given with a spoon, or fresh cow's milk, diluted with barley or rice water, or with rennet whey, may be substituted.

Pulv. ipecacuanhæ, gr. xxvj. ad xlviij.
Pulv. ipecacuanhæ, gr. ij.—iij.
Ext. Hyosciami, gr. iij.—iv.—M. f. chart. No. xij.
One to be given every three hours, mixed in a little sugar and water.

If, after the inflammation is reduced, there should be formed any pellicular concretions in the nasal fossæ, some fine calomel, or a mixture of sugar and alum finely powdered, may be gently blown into

the nostrils. (Billard.)

In chronic cases, alterate doses of calomel, with ipecacuanha, prepared chalk, and extract of hyosciamus, will, in general, if conjoined with a proper diet, the daily use of the warm bath, and some light tonic, effect a cure. A decoction of oak bark has been highly recommended when the disease continues for many weeks, and the infant becomes pallid, and very feeble; it is said to have at once removed the snuffling, and given vigour to the patient in the course of a few days. (Underwood.) A weak infusion of bark, the sulphate of quinia, or the persesquinitrate of iron, will, however, in most cases be found, we suspect, a better tonic than the oak bark.

*R—Calomel, gr. iij.

I pecac. pulv. gr. iij.

Cretæ, ppt. gr. xxxvj.

Ext. hyosciami, gr. iv.—M. f. chart. No. xij.

One to be given every three hours.

When, in the course of the disease, symptoms of cerebral congestion or irritation, or convulsions occur, these are to be combatted by

their appropriate remedies—leeches behind the ears, or to the temples, warm sinapised pediluvia, cold applications to the scalp, blisters to the nape of the neck, and purgative doses of calomel, followed by castor oil, the sulphate of soda, or purgative enemata.

During convalescence from the more chronic cases, the restoration of the patient's strength is to be promoted by a well regulated diet,

gentle daily exercise in the open air, and appropriate clothing.

3.—Bronchitis.

Bronchial inflammation of various grades of intensity, is a common complaint throughout every period of infancy and childhood. Its leading symptoms are cough, hoarseness, difficulty of respiration, and more or less febrile excitement. To these symptoms, in many cases, are conjoined, soreness of the throat, running at the nose, sneezing,

and a red and watery appearance of the eyes.

The disease, in general, commences with a slight degree of chilliness, or a complete chill, and some degree of languor, depression, and drowsiness; after a short period, a febrile reaction occurs. The patient, if old enough, now complains of dull, aching pains of the head, back, and extremities; the pulse becomes frequent, full, and somewhat tense; the face is flushed, the surface is dry, harsh, but seldom much increased in temperature; the bowels are, in general, constipated, and the urine small in quantity, and high coloured. The eyes are often red and suffused, and a thin transparent mucus is discharged from the nostrils, attended with frequent sneezing. Cough and some degree of hoarseness, with soreness, or a sense of roughness in the throat, are often present from the commencement of the attack; more generally, however, the cough is not developed until the second or third day, and usually becomes more frequent as the disease advances. The respiration is, in general, more or less short, difficult, and oppressed, from an early period of the attack; and is attended with a wheezing or rattling sound, heard first in the throat, and extending, subsequently, over the upper portion, and finally, over the whole of the chest. The respiration is always frequent, amounting, sometimes, to one hundred in a minute; and during the act of inspiration, in severe cases, there is a dilatation of the nostrils, and a heaving motion of the chest. The wheezing or sibilant and mucous rhonchi are often perfectly audible, or may be detected by applying the ear immediately to the chest, or by the open hands being applied upon the opposite sides of the thorax.

During the first period of the disease, the child at the breast sucks without much difficulty; but subsequently, although it seizes the nipple with avidity, it cannot suck for any length of time, perhaps not for more than ten or fifteen seconds, but suddenly quits the breast, and throws its head quickly backwards, and will continue in this position for some time, even after the cough has produced an expulsion of

mucus. (Mackintosh.)

The cough is at first dry, frequent, and distressing; but, in the course of the disease, is attended with an expectoration of mucus, at first scanty, but subsequently, more free and copious. The expectoration consists, at first, of thin, transparent mucus, but subsequently, of masses of viscid, opaque, muco-purulent matter, of a yellowish or greenish colour. In young children, it is most generally swallowed, or retained for some time in the throat. The difficulty of respiration is not uniform throughout the attack; the breathing being, occasionally, for a short period, tolerably easy, and then becoming suddenly extremely oppressed. The cough, likewise, often occurs in occasional fits, at irregular, and generally, short intervals, with comparative exemption from it, between them. As the expectoration becomes more copious, each fit of coughing is often attended by a paroxysm of suflocation, ending in vomiting.

The cough, difficulty of respiration, and febrile excitement, generally increase towards evening, and in the commencement of the attack, there is a distinct remission of the fever in the morning,

though usually of very short duration.

Upon percussion, at the commencement of the attack, the chest will usually be found sonorous throughout; but at a later period, a dullness

may often be detected in some parts.

When the child is old enough to describe its sensations, a feeling of weight, tightness, and soreness of the chest is generally complained of, but seldom any positive pain. When the paroxysms of cough are severe, infants are often known to scream, as if from pain, and the inspirations are, occasionally, suddenly arrested, and attended with an expression of suffering in the countenance, probably from an accompanying pleuritic inflammation. The face, in severe cases of bronchitis, is very rarely flushed, but generally pale, anxious, and often ædematous; sometimes, especially, as the fatal termination approaches, the cheeks as well as the lips acquire a livid hue. Delirium occasionally occurs, particularly towards the close of the day, and at night.

As the disease advances, the difficulty of respiration increases; the physical signs, resulting from the impediment to the free passage through the bronchial ramifications, in consequence of the amount of mucus by which they are filled, become extensive and evident; the child is unable to assume the recumbent posture without an increase of suffering; he becomes drowsy, his face assumes a livid hue, and the expression of his countenance is that of the utmost anxiety and distress; death finally occurs, often preceded by a state of complete coma, or

by convulsions.

In young children, a certain amount of drowsiness or stupor is present from the commencement of the attack, and by preventing the patient from complaining or coughing is apt to mask the disease of the chest, which is thus rendered peculiarly insidious and dangerous. A close attention will, however, detect a great frequency in the breathing, and on applying the ear to the thorax, the universal rhonchi,

sibilant and mucous, at once declare the true nature of the case.

(Williams.)

In infants, the epigastrium and right hypochondrium become, occasionally, tumid, tense, and tender upon pressure; the discharges from the bowels in these cases, are frequently small in quantity, and whitish or clay coloured at first, but subsequently they contain a large amount of light green or dark coloured bile; in other cases, the evacuations from the bowels become thin and muddy or reddish, and contain more or less mucous flocculi, the abdomen, at the same time, being greatly swollen and tympanitic. This complication is evidently the result of gastro-enteric irritation or inflammation, attended with an engorged and torpid state of the liver; it is to this form of bronchitis that the term catarrhal fever has been generally applied.

Bronchitis in children is likewise not unfrequently complicated with pneumonia, giving rise to hepatization, to a greater or less extent, of the lower and posterior portion of the lungs. This is, in fact, the ordinary form of lobular pneumonia, as it occurs in children under two years of age; it is a common complication of the bronchitis incident to the acute exanthemata and whooping cough. (Williams, Gerhard.) In the recent very interesting paper of Dr. West, of London, on the pneumonia of infants, he remarks, that the evidences of bronchial inflammation are very commonly met with in children who have fallen victims to lobular pneumonia, especially where the latter supervenes upon pertussis. The bronchitis of children occasionally assumes a chronic form, when its symptoms closely resemble those

of phthisis.

A very common and dangerous form of bronchitis, supposed to depend upon a sub-acute inflammation of the bronchial mucous membrane throughout both lungs, (Mackintosh,) very frequently occurs in young children. The cough and dyspnæa are but slight, and attract but little attention, so long as the expectoration is free, and is discharged with ease; but if, from any cause, the secretion of mucus in the bronchii is increased, and the cough arrested, speedy death from suffocation inevitably results, unless vomiting be excited, which seems to have the effect of emptying the air passages of the accumulated mucus. In other cases, an unfavourable change is produced by the inflammation becoming more acute, from exposure to cold, or other accidental cause. (Hastings, Mackintosh.) This form of the disease we have repeatedly met with; it is one often neglected by parents in its early stage, and even the practitioner will be apt to be misled in his prognosis in regard to it, unless perfectly aware of its true character, from an attention to the physical signs derived from a careful examination of the chest.

In mild cases of bronchitis, the symptoms gradually abate within a few days; in more violent attacks, the disease, however, is often more protracted—even when the termination is favourable. The respiration becoming less frequent and laborious; the febrile symptoms abating; the skin becoming softer and moist; the cough less

18

frequent, prolonged, and suffocative, and attended with a free expectoration, are the general indications of the decline of the disease. The occurrence of convulsions, and of great somnolency or drowsiness, with increased difficulty of respiration, accompanied with a feeling of suffocation; lividity of the cheeks and lips, and coldness of the extremities, are all unfavourable symptoms, and are but too gen-

erally quickly followed by a fatal termination.

The appearances discovered after death from bronchitis, are a bright crimson or brownish redness of the bronchial mucous membrane, either in patches, or generally diffused, with more or less thickening, and occasionally softening. The bronchial ramifications are generally filled with a quantity of frothy mucus, frequently sanguinolent, or with a muco-purulent fluid, the presence of which, by preventing the escape of the air from the lungs, is the reason why these, in many cases of bronchitis, do not collapse when the thorax is opened. When the disease succeeds to the pustular exanthemata, the lining membrane of the bronchii often presents traces of follicular inflammation—often ulceration. In severe and protracted cases it is not uncommon to meet with distinct patches of red hepatization, particularly at the lower and posterior portion of the lungs.

Bronchitis is generally produced by exposure to cold and damp; it is hence most liable to occur during the raw, variable, and humid weather that so frequently prevails late in autumn, or in the commencement of spring; it is common, also, in winter from accidental exposure, more especially when the season is mild and damp. It often occurs, likewise, during the summer, in consequence of the sudden occurrence, after a long continuance of intense heat and dryness, of rain, attended with a reduction of the atmospherical temperature. It may result, also, from the application of cold and damp to the surface of the child's body, by wet clothing, or exposure to a draft of air while in a state of profuse perspiration; it is a constant symptom in measles, and probably in pertussis, and not unfrequently supervenes on variola, and scarlatina, and, occasionally, upon gastro-enteric inflammation. It sometimes prevails epidemically, affecting as well children as adults, or being confined, in a great measure, to the former.

The treatment of bronchitis will differ somewhat, according to the violence of the disease, and in its different stages. In the mild cases, an emetic administered in the commencement of the attack, particularly if followed by a warm pediluvium, will very often be sufficient to arrest the disease; in all cases of bronchitis occurring in children, an emetic given at the beginning of the attack will be found decidedly beneficial; and even at a later period, when great oppression at the chest, with severe dyspnæa occurs from the clogging up of the bronchial tubes with mucus, nothing will be found to give more prompt relief. In infants and young children we invariably prefer the ipecacuanha as an emetic, to the tartarized antimony; the effects of which latter, are, in early life, often peculiarly prejudicial. The powdered ipecacuanha, mixed with sugar and water, or the wine or

syrup may be employed; the dose being proportioned to the age of

the patient.

Whenever bronchial inflammation is attended with symptoms of any degree of severity, more especially when it occurs in robust, plethoric children, blood-letting is the remedy upon which alone our chief reliance should be placed. It should be resorted to as soon after the inflammation is developed as possible; if it be delayed until a copious secretion from the lining membrane of the bronchii has taken place, it is always far less efficacious, and in some cases, its

effects will be decidedly prejudicial.

In robust and plethoric children over two years of age, particularly when the pulse is full and active, and the disease is attended with considerable acceleration of respiration, a dry, hard cough, dyspnæa, and much febrile excitement, blood should be taken from the arm to an extent proportioned to the condition of the child, and the violence of the case; and subsequently, if rendered necessary by the continuance of the inflammation, leeches may be applied upon the fore-part of the chest, or cups between the shoulders. It is better, however, in most cases, to carry our first bleeding to a sufficient extent to make a decided impression upon the action of the heart; we shall be much more likely, in this manner, to cut short the disease, than by a repetition of the bleeding from the arm, or by the application of leeches; but although as a general rule, bleeding is not advisable in the advanced stages of bronchitis, there occasionally takes place a sudden recurrence of inflammatory symptoms, or a congested condition of the lungs, in which a prompt and judicious application of leeches or cups to the chest, will be productive of the very best effects. In young children, and in cases of little severity, the abstraction of blood by leeches or cups will be sufficient. The employment, extent, and repetition of blood-letting in cases of bronchitis, whether by the lancet or by local means, demand the utmost judgment on the part of the practitioner. In severe attacks, a cure can scarcely be anticipated, without the abstraction of a sufficient amount of blood, during the first, and perhaps the early period of the second stage. We are to recollect, that in some cases, notwithstanding the extent of the bronchial inflammation, the general symptoms do not indicate a very violent attack, and unless the condition of the chest is early detected by auscultation, active measures may be neglected until too late to effect any good.

In those instances in which the disease is complicated with gastrointestinal inflammation, the application of a few leeches to the epi-

gastrium will always be found highly beneficial.

By most writers, tartarized antimony is recommended as being next to blood-letting, the most efficacious remedy in the bronchitis of children; it is probable that in severe cases, after the immediate effects of blood-letting have subsided, should the fever and dyspnæa not be materially relieved, a twelfth to an eighth of a grain of tartarized antimony, according to the age of the patient, given every hour

until vomiting or faintness is produced, may render a repetition of the bleeding unnecessary; (Maunsall;) but it is under these circumstances alone, that we should be inclined to recommend the employment of tartar emetic in infantile bronchitis; experience having taught us, that it is a remedy, the operation of which is borne with great difficulty in the early periods of life. In the generality of cases we prefer the administration of small doses of ipecacuanha. After the first blecding, we are accustomed to direct from a fourth to a half grain, in combination with calomel and hydro-chlorate of ammonia," and have always found it to produce a very decided impression upon the symptoms of the disease. When the cough continues dry, and the surface hot, with quickness and frequency of pulse, we have repeatedly added to this prescription a quarter of a grain of powdered digitalis; and notwithstanding its general condemnation, we are persuaded, that under the circumstances just referred to, it will very generally be found a very useful remedy.

> R.—Ipecacuanhæ pulv. gr. iij.—vj. Calomel, gr. iij.

Hydrochlor, ammoniæ, gr. xlviij, ad Jj.—M. f. chart. No. xij. One to be given every two or three hours, according to the urgency of the case.

After the occurrence of expectoration, the ipecacuanha may be employed combined with extract of hyosciamus, which latter, while it has a tendency to relieve irritation, is unattended with any of the disagreeable effects which so frequently result from the employment

of opiates in the diseases of young children.

The warm bath, especially when confined to the lower extremities, the child being immersed only to the hips, is, in all cases of bronchitis, productive of the best effects. In mild cases it may be employed at the very commencement of the attack, subsequent to the operation of an emetic; but in cases of considerable severity, it should invariably be preceded by bleeding, or the application of leeches.

When bleeding, either general or local, has been carried as far as is thought advisable, there is, perhaps, no remedy from which more decided relief will be derived, than from a blister, applied to the upper part of the chest, or between the shoulders; it should be allowed to remain on until the skin is uniformly reddened, and then be replaced

by a large emollient cataplasm.

In the generality of cases of bronchial inflammation, the bowels are constipated, or at least inactive, although occasionally, when accompanied with intestinal inflammation, there is more or less diarrhoa, with vitiated discharges. In the commencement it will be proper to administer some purgative, and perhaps the best is a full dose of calomel, followed by a portion of castor oil; the use of the combination of ipecacuanha and calomel, already recommended, will render the repetition of purgatives unnecessary.

The administration of expectorants will seldom be found advanta-

geous in the first stages of the disease, but in the latter period, after the inflammatory symptoms have been reduced, and a copious secretion has taken place in the bronchii, they are occasionally of advantage; the mel scillæ compositum of the United States Pharmacopæia, may be employed, or the following combination. When, however, the oppression of the chest is very considerable, from the amount of mucus filling the bronchial tubes, an occasional emetic will produce far more prompt and decided relief than will be derived from any other expectorant we can employ.

*R.—Infus. polygalæ, ʒiv.
Vin. ipecacuanhæ, ʒij.
Oxy. scillæ, ʒiji.
Tinc. hyosciami, ʒj.—M.
A teaspoonful to be given every three hours.

When there is much prostration, with a small and feeble pulse, and a degree of drowsiness, the carbonate of ammonia will often produce considerable relief.^a In such cases, wine whey, in small quantities, judiciously administered, will be occasionally serviceable. The patient is sometimes so weak and languid, that he cannot make any voluntary efforts to cough, upon which, perhaps, his life depends. (Mackintosh.) Hoffman, and some other of the German practitioners, speak very favourably of a combination of benjoin and camphor,^b in cases attended with great debility; it is said to have produced complete relief, under circumstances, to all appearances hopeless.

*R.—Carb. ammoniæ, 9ij.
Ext. glycrrh. Jij.
Aquæ, Jiv.
Oxymel. scillæ, Jiv.—M.
A tea spoonful, to be given every two
or three hours.

Or, R.—Assafætidæ, 3ss.
Liq. ammoniæ acctat.
Aquæ menth. ää, 3jj.—M.
A tea spoonful, to be given every three
hours.

bR.—Flor. benjoin, gr. iij. ad iv. Camphor. gr. iv. ad vj. Sacch. alb. 3ss.—M. f. chart. No. xij. One, to be given every two or three hours.

The diet, throughout the early stages of the disease, should be mild and unirritating. Children, at the breast, may be allowed occasionally fresh whey, or gum or barley water sweetened with loaf sugar, and prevented from sucking more than once or twice, in the course of the day; the diet of older children may consist of thin water gruel, barley or rice water, or fresh whey; and as a drink, cold toast water or weak lemonade. During convalescence, the diet should be gradually and cautiously improved; milk and preparations of the usual farinaceous substance should, however, constitute the chief food of the patient, for a considerable period, after the disease has been removed. The child should be carefully guarded, from exposure to cold or dampness, or any sudden alternation of temperature; the air of the apartment he occupies should be kept perfectly pure, by attention to strict cleanliness and free ventilation; as soon as he is sufficiently recovered, much benefit will be derived from gentle exercise, in the

open air, during dry, mild weather; the patient's body being protected by appropriate clothing.

4.—Bronchial Congestion.

That form of disease, marked by cough, laborious, and wheezing respiration, with paleness of the face, and diminished temperature of the surface, and evidently dependent upon hyperæmia of the bronchial mucous membrane, is of frequent occurrence in young infants. may occur within the month, and is generally confined to children under one year of age, although we have occasionally witnessed the

disease in children, somewhat older.

The disease, in general, commences with a dry, troublesome cough, and some degree of dyspnæa; the difficulty of breathing rapidly increases, and is attended with a peculiar, loud, wheezing sound; and, in some cases, the dyspnæa becomes so great, as to resemble a violent The face of the patient is pale, with an expression attack of asthma. of distress and anxiety, indicative of the extreme difficulty of respiration; in severe cases, the cheeks acquire an icy coldness, even when the rest of the body is not much below the natural temperature. The skin is usually soft and moist, and often decidedly cold. The pulse is always considerably increased in frequency, but without quickness or tension; in violent cases, it becomes small, and so rapid as scarcely to be counted. The bowels are generally torpid, and the urine pale, and diminished in quantity.

The cough is at first frequent, dry, and wheezing; but towards the termination of the disease, it frequently becomes moist and rattling,

indicating the secretion of mucus, in the bronchii.

Not unfrequently, the disease assumes a kind of paroxysmal character, the cough and dyspnæa being at intervals greatly aggravated, and then followed by a very considerable remission, during which the cough is less troublesome, the breathing more free, the pulse somewhat fuller and slower, and the countenance more calm; these remissions are most generally of short duration, particularly in violent cases.

After the disease has continued for some time, a cold perspiration sometimes breaks out over the face and neck, during the violent paroxysms of dyspnæa and cough.

When the disease is rapidly tending to a fatal termination, the patient becomes drowsy, and often falls into a state of complete coma;

death is frequently preceded by a severe attack of convulsions.

Bronchial congestion, as it occurs in young children, is always a dangerous affection, often destroying life within a few hours; it seldom continues longer than two or three days, a favourable or unfavourable termination generally occurring, within that period. The danger is always in proportion to the extent of the dyspnæa and wheezing, the frequency and smallness of the pulse, and the coldness of the surface. The cough, becoming moist, at an early period of the attack, is in general a favourable symptom, although we have occasionally seen death occur from suffocation, in consequence of a sudden, copious effusion of thin serum into the bronchial tubes, and

air cells of the lungs.

The physical signs of bronchial congestion, in children, are a diminution of the natural, respiratory murmur, or its complete suspension, at some particular part of the chest, but without dullness on percussion, and a loud, wheezing, or sibilant sound, which is combined with, or gives place to, various degrees of sonorous ronchi, whenever

effusion of mucus taken place, to a greater or less extent.

The bronchial mucous membrane is usually found in children who have died of this disease, of a dark red or purple colour, and more or less thickened. In many instances, we have detected an ædematous condition of the lungs; whether the effusion had occurred at the moment of death, or in the course of the disease, we were unable to satisfy ourselves. Gardien describes a series of phenomena, closely resembing those from bronchial congestion, and which he attributes to pulmonary ædema; and it is probable, that the dry convulsive cough, extreme difficulty of respiration, and imminent danger from suffocation, may, in many cases of bronchial congestion, be aggravated by the occurrence of serous effusion into the tissue of the lungs. Vesicular emphysema is very often present, though we have never met with it, to any great extent.

The causes of bronchial congestion are not well understood; it is no doubt produced, in many instances, by cold and dampness; but, in the majority of the cases that have fallen under our notice, the disease has appeared to be intimately connected with derangement of

the digestive organs.

The remedies, chiefly to be depended upon, for the cure of bronchial congestion, are, the warm bath, followed by friction over the surface,

blisters to the chest, sinapised pediluvia, and emetics.

In the very commencement of the attack, an emetic of ipecacuanha will often produce decided relief; and even at a later period, although, by no means so striking in its effects, an occasional emetic will often, nevertheless, be found advantageous; the emetic should be followed by immersion, in a warm bath, and gentle, diligent friction over the whole surface of the body. In some cases, it may be proper to employ the bath at first, and the emetic after the child is removed from it; we refer particularly to those attacks, in which, from the commencement, the skin is cold, and the breathing greatly oppressed.

The early application of a blister to the thorax, or between the shoulders, will, in all cases, prove decidedly advantageous, and, at the same time, the determination of blood from the bronchii may be facilitated, by immersing the lower extremities in warm water, to which a portion of powdered mustard has been added; this we believe preferable to applying sinapisms to the feet or ancles, as generally recom-

mended.

A full dose of calomel should be administered, at the commence-

ment of the attack, after the employment of an emetic, and its operation promoted by the use of castor oil, or mild purgative enemata, and the bowels may be subsequently kept, in a lax state, by small doses of calomel, combined with ipecacuanha. Repeated and active purging is by no means desirable, and hence the proportion of calomel should be regulated by its action upon the bowels, diminishing or increasing it, according as this is too great, or not sufficient.

Blood-letting, either from the arm, or locally by leeches, will seldom be advisable, in the bronchial congestion of children. It is probable, however, that some advantage may be derived, in most cases of the disease, from dry cupping the anterior part of the chest, or the space between the scapulæ. But if the pulse should become full and quick, and any degree of fever be developed, a moderate abstraction of blood will be proper, and, if well timed, will often pro-

duce prompt relief.

The employment of a solution of assafætida, in large doses repeated at short intervals, has been spoken of, in terms of decided commendation, by a few practitioners. In a number of cases of what is termed by him, the spasmodic catarrh of infants, but which were evidently cases of bronchial congestion, Dr. Parrish employed it with decidedly good effect, and we have not unfrequently observed it, to produce prompt and very marked relief. It may be given, in the dose of from three to five grains dissolved in water or milk, every two or three hours. We have found, in many cases attended with a small, rapid pulse and great prostration, the combination of assafætida with ammonia, to be a valuable remedy.^a The inhalation of the fumes of tar or rosin may occasionally be employed with good effect.

R.—Assafætidæ, Jj.
Liq. ammoniæ acetat.
Aquæ, aa. Jjj.—M.
A tea spoonful, to be given every three hours.

When a secretion begins to take place from the mucous membrane of the bronchii, an occasional emetic of ipecacuanha will give great relief; under these circumstances, we have occasionally found the balsam copaibæ advantageous, in relieving the remaining cough and oppression.^a

*R.—Mucil. G. acacie, Fiv.
Oxy. scille, Fiv.
Vin. ipecae. Fij.
Spir. wther. nitr. Fij,
Bals. copaib. Fj.
Magnes, calc. gr. x.—M.
A tea spoonful, every three hours.

The diet throughout should be mild and unirritating; children, at the breast, will require no other food than the nurse's milk; when weaned, fresh cow's milk diluted with barley water, and sweetened, arrow root and tapioca, with or without milk, may be given; when the child is greatly exhausted with a small, feeble pulse and cold surface, a moderate portion of wine whey may be allowed daily.

During convalescence, the same directions are applicable, as were given, when treating of bronchitis.

5.—Pneumonia.

Inflammation of the tissues of the lung ranks among the most frequent diseases of children, and may occur, at any period, from birth upwards. In young children, or those under six years of age, the disease appears, in the majority of cases, to be the consequence of extensive bronchial inflammation, and is probably, as supposed by some of the French writers, produced by the extension of inflammation from the bronchii to the substance of the lung. In older children, the disease more commonly commences in the lung, and the circumscribed bronchial inflammation, which so generally attends it, is, in all

probability, a secondary affection.

The symptoms of pneumonia, which in very young children, are often very obscure in the onset of the disease, even when more strongly marked differ but little from those of bronchitis. There is invariably more or less cough and dyspnæa, and increased frequency of respiration. The cough is at first short and dry; it increases in frequency, with the progress of the disease, and soon becomes moist, but seldom attended with much expectoration, which is not common, in any of the pulmonary affections in young children, whatever mucus is brought up from the lungs being, in general, swallowed; towards the close of fatal eases, when a considerable portion of the lung is rendered impermeable to the air, the cough becomes feeble, and nearly extinet. The dyspnæa gradually augments in intensity; the face of the patient becomes flushed, often in rounded patches, occupying the centre of each cheek; the lips are swollen, and of a dark or livid red, and the nostrils are strongly dilated at each inspiration. In the more chronic cases, the dyspnæa is much less intense, and unattended with the same violent efforts at respiration; and the face, instead of being tumid and flushed, becomes pale, and emaciated.

The respiration is always increased in frequency, there being generally, from fifty to seventy, and sometimes more, inspirations in a minute. The state of the pulse is variable; it is usually increased in quickness and frequency, but seldom possessed of any firmness. The skin is generally dry, though not always increased in temperature. There is almost invariably augmented thirst, and, in the advanced

stages of the disease, impaired appetite for food.

When the disease is acute and rapid, in its progress, and the dyspncea great, there is generally more or less drowsiness, amounting,

often, to a state of complete stupor.

Vomiting is often present in the early stage of the disease, after severe paroxysms of coughing. Diarrhæa is a frequent attendant upon the disease, either at its commencement, or throughout its continuance—the discharges from the bowels varying in appearance, according

to the seat and extent of the gastro-intestinal affection, of which the diarrhea is the symptom.

The duration of pneumonia varies from twenty days to several

weeks or even months.

The physical signs of pneumonia, as it usually occurs in young children, are at first limited to the mucous and sub-crepitous rhonchus, dependent upon the secretion of mucus in the bronchii. The subcrepitous rhonchus is frequently continued throughout the disease, being rarely replaced by the fine crepitant rhonchus, as in the pneumonia of adults. When induration has extended to a considerable portion of the parenchyma of the lung, bronchial respiration becomes developed, chiefly at the upper and middle portions of their posterior part; it is rarely heard in the lower lobe, from the comparative smallness of the bronchii, and their early obliteration, by the progress of the compression. The respiratory sounds are very peculiar; the inspiratory murmur, instead of being full and expansive, as in a healthy child, is short, obscure, and almost without the vesicular murmur, and may or may not be accompanied with the mucous or sub-crepitous rhonchus; the expiration is rarely distinct, unless the bronchial respiration is fully developed, when it is usually louder than the inspiration. (Gerhard.) Upon percussion, the sound, on both sides of the chest posteriorly, will be found, compared with that of a healthy child, dull; more or less so, according to the extent of the induration.

These physical signs are those of lobular pneumonia, which is unquestionably the most frequent, though, by no means, the only form of the disease met with in infants, under five years of age. (Gerhard,

Rufz, Rilliet and Barthez, Valleix, Becquerel, West.)

In fatal cases, the lung affected with lobular pneumonia presents a mottled appearance, portions of a deep red colour being interspersed in the midst of others having a natural aspect. This condition closely resembles that of a lung which is the subject of atelectasis, or congenital impermeability of the pulmonary cells; (Jörg;) from it, however, it may very generally be distinguished by the circumstance of the dark portions of the lung, being, in cases of lobular pneumonia, only apparently depressed beneath the general level, in consequence of the emphysematous distension of the surrounding tissue, while in atelectasis the depression really exists, from the dark portions never having been expanded by the entrance of air. (West.) A section of the lung presents an appearance similar to that of its surface; the cut surface being, at the same time, smooth and shining, not granulated, and yielding, on pressure, a whitish slimy mucus, instead of blood or pus. The progress of the inflammation usually presents three stages. In the first, the greater part of the parenchyma of the lung is soft, rosy, or grey, little infiltrated with serosity or blood, and permeable; in other circumscribed portions of the lung, the tissue is of a dark brown or bluish colour, very hard, and of a shining, glossy aspect. These indurations are exactly limited by the cellular tissue interposed between the lobules, and are not usually surrounded by

infiltrated and friable pulmonary tissue; in this stage of the disease, the name lobular induration is applicable to the lesion. (Gerhard.) The lung has an unequally hard or knotty feel. In the second stage of induration, the isolated lobules are more generally indurated; the incised lung has at first sight a homogeneous appearance, but an attentive examination shows, that it is marbled with small, irregular, grevish spots, from which bubbles of air can be forced by pressure; these spots being portions of the pulmonary tissue, in which the vesicular structure is still distinct, surrounded by indurated portions of lung. (Gerhard.) It is comparatively rare, that single lobules are found affected, the indurated portions usually comprising four or five, which together form a mass of the size of a nut or an almond. If the patient lives for some time, the intervening substance usually becomes affected, and the lobular is thus converted into lobar pneumonia. This change does not appear to take place, from the gradual extension of disease, from each inflamed lobule, as from so many distinct centres; but, sooner or later, the whole intervening pulmonary substance seems at once to become the seat of inflammatory action, which runs its course, as in ordinary lobar pneumonia. (West.) In the third stage of induration, the lung presents a shining homogeneous appearance; the vessels are still visible, as little white lines, and the bronchii are compressed, but with a little care, they may be readily traced; they contain some whitish mucus, very rarely a yellowish or puriform fluid; the mucous membrane generally retains its shining, transparent appearance, and is not often of a bright red. (Gerhard.) In lobular pneumonia, it is seldom, that the inflamed lobules pass into the stage of grey hepatization, or the pneumonia becomes general. (Gerhard, West.) Occasionally, however, the inflamed lobules do become infiltrated with pus, and then present, on a small scale, the same appearance, as is seen on a large scale, in ordinary grey hepatization, (West,) or, each lobule becomes the seat of a small, distinct abscess, with numbers of which the lung seems riddled. These collections of matter vary in size, from that of a millet seed, to that of a pea, and are found in the centre, as well as at the surface of the lung. sometimes communicate distinctly with a bronchial tube; but, at other times, no such communication can be clearly traced. They are irregularly circular, not lined by any smooth membrane, nor surrounded by a barrier of indurated lung, such as is often seen around small collections of softened tubercles. They may be further distinguished from tubercle, by the circumstance of their usually occupying the lower lobes only, and their being found, in cases, where all the other organs are free from tubercles. (West, Rilliet, Barthez.) This, however, is decidedly a rare occurrence. Rilliet and Barthez met with it, only twenty-six times in three hundred and fourteen post mortem examinations; West, but twice in thirty-seven; Gerhard does not refer to it at all, and we have never met with it in a single instance of what could, with propriety, be denominated lobular pneumonia.

The lungs are, in every case, indurated throughout a large portion of their structure, and, in no instance is the lesion confined to a single

lung.

In conjunction with lobular pneumonia, intense congestion of the bronchii is not unfrequent; it is especially marked, in cases of the disease, supervening on pertussis; the bronchii, in general, contain some secretion, which is very commonly mucous; it is sometimes scanty, but occasionally abundant, and not unfrequently very tenacious, and of a consistence approaching to that of false membrane; in the latter case, the secretion is usually more membraniform in the larger bronchii, more fluid in those of smaller calibre, which are sometimes rendered impervious to air by its quantity. (West.) Dilatation of the bronchii are occasionally met with; when slight, confined to the smaller tubes, but when considerable, involving those of larger size. It is found to exist in the most marked degree, when the pneumonia has supervened on pertussis. (West.) Emphysema of the lungs is a very frequent complication of infantile pneumonia, especially in those cases attended with severe bronchial symptoms. Recent inflammation of the pleura is occasionally met with. Tubercles of the lungs are comparatively of rare occurrence.

The lobular inflammation of children, may be produced by any of the causes which ordinarily give rise to bronchitis. It is a frequent consequence of measles, scarlatina, or whooping-cough, and severe, long-continued bronchitis; especially the two last. By some, the disease is supposed to be very generally produced by some pre-existing affection, by which the powers of life are depressed, or the constitution of the blood altered; the blood in consequence gravitating towards the inferior parts of the lungs, and in this manner, producing congestion, inflammation, and induration of the lobules. (Billard, Gerhard.) This, we suspect, can be the case only in young infants, and is not the usual mode of the production of lobular pneumonia in children.

Ordinary lobar pneumonia, differing but little from the same affection in adults, is also a common disease of childhood; occurring, however, according to our experience, which is confirmed by that of other observers, (Gerhard, Rufz, Rilliet, Barthez,) most commonly in children over five years of age; it may, however, occur, at a much earlier age. We have met with it in infants of three years; and in the twenty-two post mortem examinations of cases of lobar pneumonia, given by Dr. West, of London, nineteen are of children under five

vears of age, and ten of children under two.

The disease usually commences in the same manner as bronchitis, with a chill, more or less severe and prolonged, followed by increased heat and dryness of the skin, increased frequency of pulse, accelerated respiration, dyspnæa, and cough. The respiration is invariably accelerated, the number of inspirations being generally upwards of thirty, and sometimes beyond seventy, in a minute; there is also a peculiar abruptness in the inspiration, it occurring suddenly, before the expiratory movement is completed. There is always more or

less dyspncea, which is proportionate to the violence and extent of the pulmonary affection, and goes on increasing, with the progress of the disease, and is often attended with great anxiety, and, in severe cases, with a sense of impending suffocation, rendering a recumbent position insupportable. The cough is at first dry, but soon becomes moist; the expectoration, when it occurs, which is seldom the case in young children, consists, at first, of a whitish, viscid mucus, but becomes subsequently reddish or rust-coloured. Pain of the side is almost invariably present; it is generally acute, though sometimes dull; it is commonly felt at the anterior margin of the axillæ; (Gerhard;) it is augmented by the cough, and often declines long before the other symptoms disappear. The appearance of the countenance, differs but little from that which occurs in lobular pneumonia. There is generally loss of appetite, and increased thirst; the bowels are commonly torpid; though, occasionally, when the disease is complicated with intestinal inflammation, profuse diarrhea may be present throughout the disease. Vomiting is a very frequent symptom, particularly at the commencement of the attack. When the pneumonia is severe and extensive, the patient exhibits considerable dulness or drowsiness, often amounting to complete stupor. Delirium is not often observed, and when it is, we have generally found it to be an unfavourable symptom.

But, it is almost exclusively from the physical condition of the chest, that our diagnosis is to be derived in this disease. The physical signs are the same as in the pneumonia of adults, crepitant rhonchus, bronchial respiration, and a flat sound upon percussion;—fine, crepitant rhonchus is seldom, if ever, present without bronchial respiration;—while these, with diminished sonorousness of the chest, are always attended with bronchophony. The crepitus is generally larger in children; and if, for a short time, it is not heard, it may be generally reproduced, by causing the child to cough, when it is again distinguished, in the strong inspiration that succeeds the cough, giving rise to a

sound like the cracking of a whip. (Gerhard.)

The duration of the disease, will, in a great measure, depend upon the severity of the attack; the extent of the inflammation; the nature of the treatment; and the period at which it is commenced. In very violent attacks, the disease implicating a considerable portion of the lung, death may take place very promptly; in other cases, the fatal termination may occur at a much later period, from extensive disorganization of the lungs. We have seen the disease, in what were evidently very severe attacks, promptly cut short, by appropriate remedies; but in general, even when recovery takes place, the disease is of some continuance. In the cases reported by Dr. Gerhard, in which the commencement and termination of the symptoms were ascertained, the mean duration of the pneumonia was nearly fifteen days.

Lobar pneumonia in children, is not a very fatal disease, if placed under proper treatment at an early period after its occurrence:—in

forty cases noted by Dr. Gerhard, in the Children's Hospital at Paris, but one terminated fatally. The result of our own experience, confirms his statement, that in children over six years of age, it is not an unmanageable disease. Only one hundred and forty-six deaths, from pneumonia in children between five and fifteen years of age, are reported to have occurred in Philadelphia, during the fifteen years,

preceding 1840.

The anatomical characters of the lobar pneumonia of children, are identical with those of the same disease in adults; it is unnecessary for us, therefore, to detail them here. The disease is most generally confined to one lung, and occurs more frequently in the right than in the left. It is most generally accompanied with pleuritis, to a greater or less extent. (Rilliet, Barthez, Baron, West.) Vesicular pneumonia, or the vesicular bronchitis of Lanoix, is a very frequent complication of lobar, as well as of lobular pneumonia in children. The portion of lung which is the seat of this affection, presents an uneven surface—the inequality being produced by the presence of a number of small, circular, yellow prominences, which bear a considerable resemblance to crude tubercles. They may, however, be readily distinguished from tubercles; for not only do they almost always occupy the lower margins of the different lobes, but on puncturing any one of them with the point of a scalpel, a drop of pus will exude, showing them to be small collections of matter. They appear to be formed in the extreme pulmonary vesicles. These minute abscesses, generally fringe the inflamed lobes, especially at their lower margins. Occasionally, they involve the whole of the middle lobe of the right lung.

Lobar pneumonia occurs in both sexes, but most frequently in boys. In Philadelphia, during the eight years preceding 1840, fifty-seven more deaths from pneumonia, are reported to have taken place in boys than in girls. The disease, being, in general, produced by cold and dampness, is most prevalent during the spring and autumn—though cases occur at all seasons of the year, but seldom during

those months the temperature of which is mild and equable.

The treatment of pneumonia in children, must be, in a great measure, governed by the particular circumstances of each case. The employment of blood-letting, will very generally be found beneficial; and, in children over three years of age, in the commencement of the attack, when carried to a proper extent, it will not only, greatly and promptly relieve the dyspnæa and cough, but have a tendency to materially shorten the duration of the attack. In young children leeches or cups to the anterior parieties of the chest, or between the scapulæ, in numbers proportioned to the violence of the symptoms, and the age and strength of the patient, will, in general, suffice; but in older children, whenever it can be effected, we should prefer, in severe cases of pneumonia, a pretty free bleeding from the arm, which has always appeared to us, to produce a more decided impression upon the disease, than the more gradual abstraction of blood by

leeches or cups. The propriety of repeating the bleeding, must be left entirely to the judgment of the practitioner; when the first bleeding has been well timed, and carried to a sufficient extent, a second will not generally be required. Whenever, however, the leading symptoms, particularly the dyspnæa, continue with little abatement, we should never hesitate to repeat the bleeding, either from the arm, or by leeches or cups, according to the violence of the remaining symptoms, and the degree of exhaustion of the patient. It is in the early period of the attack alone, that we are to expect any very decided advantage from blood-letting; in the latter stages of the disease, it is seldom beneficial or admissible; though we have, occasionally, met with cases, which had existed many days in which the cautious application of cups between the shoulders, has been attended with very marked relief.

In all cases, the exhibition of some mucilaginous drink, in small portions, and at short intervals, will be found to abate, very sensibly, the cough, and relieve the dryness of the fauces, which, in the early stage of the disease, is often a harrassing symptom. A solution of gum or the mucilage of the elm bark or pith of sassafras, sweetened, will

be the best we can employ.

By many physicians, the employment of tartarized antimony, in large doses, has been recommended in the treatment of pneumonia, occurring in children, as well as in adults, either in conjunction with blood-letting, or as the sole remedy; and cases have been published in proof of its efficacy. (Guersent.) As an emetic, in the commencement of severe cases, we have often derived advantage from the employment of antimony; and the same apears to have been the experience of others. (Cuming.) In young infants, we have never employed antimony in any form, believing it to be, at best, a remedy of doubtful propriety, at this period of life; in the pneumonia of older children, we have repeatedly given it, in divided doses, subsequently to bleeding, and often with very great benefit. In the cases, occurring in infants under three years of age, small doses of ipecacuanha, combined with calomel, may be given; it is a remedy, with the effects of which, we have had cause to be much pleased. In numerous instances, we have combined with it, a small portion of powdered digitalis, and we think not without very decided advantage. In many cases, we may add to the mucilaginous drinks of the patient, a small quantity of the wine of ipecacuanha, and of the tincture of hyosciamus.^b This will often be found, after blood-letting, to aid very materially, in allaying the cough, dyspnæa, and general restlessness of the patient. In the commencement of pneumonia, if the bowels of the child are costive or torpid, it is proper to administer a full dose of calomel, to be followed, in a few hours, by a dose of castor oil; or, in robust children, over three years of age, a dose of equal parts of magnesia and sulphate of magnesia. Subsequently, the bowels should be preserved regularly open by enemata, or occasional doses of some mild purgative; a grain of calomel, with half a grain

each, of ipecacuanha and extract of hyosciamus, administered twice or three times a day, will usually effect this object.

*R.—Calomel. gr. iv. ad vj.

Ipecae. gr. iij.—iv.

Pulv. digitalis, gr. iij.—iv.—M. f.

Chart. No. xij.

One to be given every three hours.

bR.—Mucil. G. acaciæ, Fiv.
Vin. ipecac. Fi.
Tinet. hyociami, Fj.
Sacch. alb. pur. Fij.—M.
A teaspoonful to be given every two, three, or four hours, according to the age of the infant.

Blisters are remedies, from which much advantage will be derived, in most of the cases of pneumonia occurring in children. In violent cases, or in those attended with much febrile excitement, they should not be applied, until the violence of the symptoms have been abated, by direct depletion, and never be allowed to remain on, longer than to produce a general redness of the skin; when they should be removed, and replaced by an emollient cataplasm. In slight cases, a weak mustard poultice may be employed, instead of a blister; a very good one, consists of thick slices of bread, dipped in vinegar, and lightly sprinkled with powdered mustard. (Gerhard.)

Warm pediluvia, with the addition of mustard, or sinapised hip baths, produce always a favourable revulsion from the lungs, and should not be overlooked, in the treatment of the pneumonia of chil-

dren.

After the violence of the disease has been somewhat abated, we have found great advantage from the administration of small doses of calomel, ipecacuanha, and extract of hyosciamus, every three hours; under the same circumstances, the compound honey of squill may be administered; given in divided doses throughout the day, it forms an

excellent expectorant in cases of children.

In chronic cases, our chief dependence is upon revulsives, applied, either upon the chest, or upon the surface generally. No revulsive is said to be superior, in these cases, to a bath, made by dissolving from one to four ounces of sulphuret of potassa, according to the strength of the child, in warm water, care being taken, not to prolong the bath, if the patient appear exhausted, and not to expose his face to the vapour from the sulphur. (Gerhard.)

When in the advanced stage of the disease, there is great exhaustion, with symptoms of impending suffocation, the use of carbonate of ammonia has been strongly recommended; (Cuming;) but, under such circumstances, there can be but little hope of the patient's recov-

ery.

R.—Decoct. senegæ, ¿iij.
Carb. ammoniæ, ʒj. ad. ʒjss.
Saech. alb. ʒjj.—M.
A teaspoonful to be given every three or four hours.

It must be evident, that in severe cases, our chief hopes of a favourable termination must be founded upon an early detection of the true character and extent of the disease, and the judicious employment, in its commencement, of bleeding, and the other antiphlogistic remedies, adapted to the age of the patient, and the violence of the symptoms. After a change has occurred in the texture of the lungs, we can do but little beyond moderating the more pressing symptoms.

The diet of the patient, in the early period of the more acute cases, should be confined almost exclusively to plain mucilaginous fluids, or whey; in the more prolonged cases, however, after the violence of the disease has been subdued, plain water gruel, arrow root, or tapioca, may be allowed. The apartment occupied by the patient should be kept of a comfortable uniform temperature, and, at the same time, the purity of the air should be secured by proper ventilation, and a strict attention to cleanliness. After convalescence is fully established, gentle exercise in the open air, in mild dry weather, may be taken with great propriety, but for a long period, the utmost care should be taken, by appropriate clothing, and other precautionary measures, to guard the patient from exposure to cold and damp; and, while a gradual improvement is made in his diet, rich, undigestible, and irritating food must be avoided, as well as excess in the use of those articles that are allowed.

Having alluded, in the foregoing section, to that condition of the lung which has been denominated by Jörg, Atelectasis Pulmonum, it may be proper to give a short notice of the disease for the information of such of our readers, as may not have met with that gentleman's work, Die Fötuslunge in gebornen kinde. The disease consists in an agglutination or obliteration of the pulmonary cells, to a greater or The portion of the lung in which less extent, in one or both lungs. this obliteration of the cells exists, is depressed below the level of the surrounding tissue, and is of a dark red or violet hue. It presents, when incised, a smooth, red surface, from which a bloody serum may be squeezed, but in which no air bubbles can be detected. This condensation of the tissue of the lung, from obliteration of the air cells, is not produced by either inflammation or effusion, but is the result of imperfect respiration, which prevents the air from penetrating and distending all the cells of the lungs; the parts affected, consequently, retaining the colour and density of the fætal lung, and sink when placed

The causes assigned for this affection, are, a very rapid and easy delivery, or a too strong compression of the head of the child during parturition;—both of which circumstances are common causes of asphyxia in new born infants;—or when respiration does take place, prevent it from being sufficiently full to dilate the whole of the texture of the lungs, and, hence, give rise to the disease under consideration.

The affection is especially characterised by an imperfect, short, anxious, and sometimes scarcely perceptible or intermittent respira-

tion; a feeble, plaintive cry, difficulty of sucking, an imperfect elevation of the ribs and sternum, livid or blue colour with coldness of the skin, a weak languid pulse, and symptoms of general prostration. In consequence of the imperfect respiration, and impeded circulation, nutrition is always impaired, and hence, if the child survive, it becomes emaciated, and cannot bear the slightest motion or exercise; in some cases congestion of the brain is produced, and convulsions; or, from the violence of the respiratory efforts, inflammation of the bronchii

and lungs.

The efforts of the obstetrician should, be as early after delivery as possible, to induce in the infant a deep, full, vigorous inspiration; for, if the respiration be allowed to continue weak, and the lungs to be but imperfectly expanded, the infant seldom survives for any length of The mouth of the infant should, therefore, be cleared of any mucus that may be present in it; and by smart slaps upon the glutei muscles, or upon the palms of the hands and feet, respiration will often be fully established, or we may proceed as directed in the section on asphyxia. Rubbing the chest and back with sulphuric ether, and introducing it into the nostrils and mouth, immersion in an aromatic warm bath, and repeated clysters and emeties are recommended by Jörg, all of which are of doubtful propriety. Emetics, and all neans which tend to increase the engorgement of the vessels of the brain, are, indeed, strongly contra-indicated when the brain has been injured during labour; in these cases a few grains of calomel, and stimulants to the lower extremities, cool lotions to the head, and even leeches to the latter, will often be found of advantage.

6.-Pleuritis.

Inflammation of the pleura, is not an unfrequent disease of infancy and childhood. It may occur at any period, from birth upwards; (Rilliet, Barthez, Billard;) but it is more frequently met with in children over two years of age. (Earon, West.) In children, pleurisy is most generally a complication of severe bronchitis or pneumonia,

(Barrier,) though it may occasionally occur alone.

In infants there is a very great difficulty of arriving at a correct diagnosis of pleurisy, even when it occurs independently of disease of the bronchii or lungs. Its existence may be suspected when the child is affected with much anxiety, restlessness, dyspnæa, painful catching inspiration, quick and more marked contractions of the diaphram and abdominal muscles—and, if, with these symptoms, the cry preserves its integrity, presenting no other alteration than that which arises from fatigue and exhaustion. The physical signs are equally uncertain; yet, if there be an absence of the respiratory sound throughout one side, or at any part of the thorax, while the cry is complete and free, when there would appear to exist effusion without hepatization, the infant is, in all probability, affected with pleurisy—a conclusion, nevertheless, that is still uncertain.—(Billard.)

In older children the symptoms are more marked and characteristic. It in general commences with a chill, in some cases slight, in others more severe, which is soon succeeded by considerable febrile action. The skin being usually dry and hot, the face flushed, and the pulse frequent, full and strong. To these symptoms are soon added cough, dyspnæa, and pain of some portion of the chest. The respiration is short, quick, and somewhat oppressed, the oppression being aggravated when the patient is in a recumbent posture. The respiration is performed chiefly by the action of the abdominal muscles and diaphragm, the motion of the chest being instinctively restrained by the patient, in consequence of the pain attendant upon the elevation of the ribs; sometimes each inspiration gives rise to a sharp cry or moan, and an expression of countenance indicative of suffering. The cough is at first short, dry, and stifled; it is generally increased when the child is lying down, and more so, when lying on one side than on the other. When both pleuræ are affected, the only position in which case can be obtained, is upon the back, with the head and shoulders elevated. Pain is generally complained of, and usually referred to one side or other of the thorax, sometimes to both. The pain is increased by the cough, and on inspiration; and, when intense, gives to the countenance that peculiar contraction, which is the common expression of suffering in children. The cough, in the course of the disease, becomes more moist, and a little viscid mucus, is often raised by it; expectoration is seldom attendant upon pleurisy, unless when complicated with bronchitis or pneumonia. If the disease is not arrested in its first stages, the breathing becomes more and more short and oppressed; while the cough and pain generally abate, the last often entirely disappearing. The acute febrile symptoms are seldom of long continuance, usually abating when the effusion takes place within the chest, and, in chronic cases, may assume a slow remittent, or hectic character. The intellect of the patient is affected, in the same manner as in pneumonia; there is generally, however, more pain in the head, in the commencement of the attack; delirium and extreme restlessness are more apt, also, to occur in the course of the disease.

The duration of pleurisy, when the disease is properly treated, is generally short; but when accompanied with bronchial or pneumonic inflammation, it is somewhat difficult to ascertain with precision, either its commencement or termination. Pleurisy may assume a very chronic form, and is then marked, at first, with very obscure symptoms, though it may, in the end give rise to nearly all the phenomena of phthisis, and is not unfrequently attended with the develop-

ment of tubercles as well of the pleura as of the lungs.

The physical signs of pleuritis are extremely equivocal, and are of little value in determining the existence of the disease in children, when the lungs are at the same time affected, the diminished motion and sound of respiration, from pain and from effusion, is perhaps the most constant; dullness upon percussion will always be present when effusion has taken place.

Upon examination after death, in patients who have fallen victims to pleurisy, the appearances discovered are, adhesions of the pleura, more or less recent, the pleura covered, to a greater or less extent, with yellowish lymph, forming in some cases, a coating of considerable thickness; effusions into the cavity of the pleura of a serous or sero-purulent fluid, or of serom mixed with numerous small flakes of lymph. In some instances, the pleura is studded with numerous small red points, arising from ecchymoses beneath the membrane; we have observed this upon the costal pleura, but more frequently upon that of the lungs. The pleura is not unfrequently thickly studded with minute tubercles, the lungs generally being in a similar condition; we have met with tubercles of the pleura, however, where none existed in the lungs. The pleuritis is most commonly confined to one

side of the chest, but may affect both.

Pleurisy is not, of itself, a very fatal disease, and is readily controlled by an appropriate treatment. We have never seen a case in which the disease terminated fatally in its acute stage. Even when extensive effusion has taken place in the cavity of the chest, this will often be entirely absorbed, if it consists chiefly of serum; but when purulent, it generally produces considerable uneasiness and suffering, and, sooner or later, causes the death of the patient. When extensive adhesions occur between the pleura costalis and pulmonalis, in chronic cases, a very marked contraction of the chest takes place, on the side on which the adhesions exist, productive, when of any extent, of decided deformity. In cases of copious effusion into the cavity of the pleura, the lung is more or less pressed upwards, and its functions impeded. If, after this condition has existed for a considerable time. absorption of the effused fluid takes place rapidly, the lung may not expand with sufficient celerity to fill the chest, and the ribs will consequently contract upon the compressed lung, and more or less contraction of the cliest will be produced. The consequent deformity is often obliterated during the growth of the child; though occasionally it exists, to a certain extent, throughout life.—(Morton.)

Of the treatment of pleurisy, but little need be said, as it differs in no important particular from that proper in cases of bronchitis and pneumonia; in conjunction with which the disease most usually occurs in children under six years of age. (*Parrier*.) The remedy upon which the chief dependence is to be placed, is bloodletting, early employed, and carried to a sufficient extent to produce a decided impression upon the symptoms of the disease; precisely the same remarks that were made in relation to the employment of this remedy in cases of pneumonia, are applicable to the disease before us. In the commencement of the attack, the bowels should be freely opened by a purgative of calomel, followed by castor oil, or sulphate of magnesia, and kept in a regular condition, by small doses of ipecacuanha and calomel, repeated daily. In the latter period of childhood, when pleurisy is most apt to occur independently of inflammation of the lungs, the tartarized antimony, either alone or

combined with nitre, will often be found a powerful auxiliary to bloodletting, in arresting the progress of the disease. The tartarized antimony, combined with nitre and calomel, is particularly advantageous in those cases in which, after bloodletting, the skin remains hot and dry, and the cough short and frequent. Under the same circumstances, the warm hip bath, and warm pediluvia act beneficially. As soon as the violence of the disease has been subdued by direct depletion, a blister to the chest, as directed in cases of pneumonia, will, very often, very promptly relieve the cough, pain, and dyspna; under the same circumstances that blisters become proper, considerable benefit will be derived from small doses of the compound powder of ipecacuanha, particularly in the evening; when well timed, nothing will be found more effectually to relieve the cough and restlessness, and promote the healthy action of the cutaneous exhalents, particularly if, at the same time, a warm pediluvium be employed.

aR.—Nitrat. potassæ, 3j.

Tart. ant. gr. ij.

Aquæ, 3iv.
Saech. alb. 3ij.—M.
A tea spoonful to be given every two or three hours, according to the age of the patient.

bR.—Nitrat. potassæ, 3j.
Tart. ant. gr. j.
Calomel, gr. iv.—M. f. chart. No. xij.
One to be given mixed in sugar and water,
overy three hours.

When effusion to any extent has occurred within the chest, and the fluid is not speedily absorbed, after the inflammation of the pleura has been subdued, its presence being indicated by auscultation as well as by the inability of the child to assume a recumbent posture without experiencing more or less dyspnæa and cough, small doses of calomel, squill, and digitalis, given every three or four hours, will often cause the effused fluid to be absorbed. In some cases, a combination of digitalis and bi-tartrite of pottassa, or a mixture of the syrup and oxymel of squill, with sweet spirits of nitre, will prove highly efficacious.

*R.—Polv. seillæ, gr. iij. ad. iv.

Calomel, gr. iij.

Digitalis, gr. iij.—M. f. chart. No. xij.

One to be given every three or four hours.

CR.—Syrup seillæ, Jvj.

Oxy. seillæ, Jij.

Spir. ath. nitr. Jvj.—M.

Dose, twenty-five drops three or four times a day.

The same rules are to be observed in regard to the diet of the

patient as were directed in pneumonia.

In chronic pleuritis, our chief remedies are a mild unirritating diet, composed principally of the farinacea and milk, counter-irritants to the parieties of the chest, as blisters, or tartar emetic ointment, and internally, calomel in small doses, combined with some of the diureties, of which, perhaps, digitalis and squill are the best, though occasionally the tincture of Sanguinaria Canadensis, will be found a very valuable remedy in these cases, in the dose of from two to ten drops, according to the age of the child, repeated three times a day; the bowels

being kept open by mild laxatives, or purgative enemata. Iodine, both internally and externally, may, in some cases, be productive of benefit. When effusion of pus has taken place in the pleura, the case, as we have already remarked, is generally hopeless; nevertheless, we are assured that by an operation, the pus has been evacuated, even in a child only seven years of age, and entire recovery has ensued, with the exception of a slight contraction of the chest, on the affected side.—(Herpin.)

During convalescency from chronic pleuritis, change of air will often be advisable, especially the removal from a cold, damp, and

variable climate, to one warmer and more equable.

7.—Tracheitis.—Croup.

CYNANCHE TRACHEALIS - ANGINA POLYPOSA VEL MEMBRANACEA.

If we take into consideration its frequency, the rapidity of its progress, the distressing and painful symptoms by which it is accompanied, and the amount of mortality produced by it, tracheitis or croup, must be regarded as one of the most formidable of the diseases peculiar to infancy and childhood. In Philadelphia, during the eight years preceding 1840, there occurred eight hundred and twenty deaths from croup, being an average of 102.5 per annum; in London, 391 deaths from this disease are reported in 1840; and in the

whole of England, during the same year, 4,336.*

The croup is, strictly speaking, an inflammation of the mucous membrane of the trachea and larynx, the latter being, in the majority of cases, the part first affected. The peculiarity of the disease consists in the exudation, at an early period, of coagulable lymph, upon the surface of the inflamed membrane of the trachea, forming, in many cases a pseudo-membrane, extending often from the larynx throughout the larger, and even sometimes into the smaller divisions of the bronchii. It has been doubted, however, whether in certain mild cases of frequent occurrence, unattended with fever, and readily cured by simple means, there is any tendency to the pseudo-membranous exudation. (Blaud, Dugès.) These cases of simple laryngeo-tracheitis, have been denominated spurious croup.—(Guersent, Berton.)

The distinguishing symptoms of croup are, dyspnæa, a peculiar hoarsness of the voice, a loud ringing cough, sibbilant inspiration, and

iever.

In the majority of cases, the disease is preceded by symptoms of bronchitis. The patient is affected with more or less chilliness, succeeded by increased heat of the surface, lassitude, loss of appetite,

^{*} Entire mortality of London during 1840, 45,284; and of the whole of Empland, 359,561. In Paris, the deaths from croup in 1838, were 187; in 1839, 286; and in 1840, 326.

and cough. These symptoms vary in intensity and duration; in some cases presenting simply the characteristics of a slight bronchitis for several days; while in others, the tendency to croup is exhibited from the commencement of the attack. It is usually during the night that the proper symptoms of the disease are developed. The child, after retiring to rest, suddenly awakes from his sleep, with difficult and wheezing respiration, and frequent paroxysms of a loud, ringing cough; his skin is intensely hot, his face flushed, and his voice hoarse and indistinct. Frequently he complains of a sense of constriction in the throat, and sometimes of pain about the larynx. In general, these symptoms, after a short period. gradually abate, the respiration becomes more free, the patient falls again into sleep, and on awaking in the morning, with the exception of some degree of hoarseness, and a slight cough, presents no symptoms of any serious disease:—the pulse, however, will, in general, still be found to be more frequent than natural, the cough more hoarse and resonant. On the ensuing evening the respiration becomes again suddenly difficult, loud and wheezing, and the cough convulsive and ringing; the patient feels a sensation as of impending suffocation, and carries his hand to his throat, as if to remove the cause of his suffering. His face becomes swollen and flushed, his pulse hard and frequent, and his voice hoarse and almost inaudible. The cough is unattended with expectoration, or perhaps causes the discharge of a small amount of glairy mucus, streaked with blood. The violence of these symptoms may, after a time, moderate; but if so, soon again increase in violence, and usually continue, with slight remissions and exacerbations of augmented severity, during the night. Sleep appears to favour their return; or if the patient remains awake, they are excited by his crics, or by the slightest paroxysm of coughing. The symptoms constantly augment in intensity, and the remissions become slighter and of shorter duration; the cough looses, however, its acute ringing sound, while the loud wheezing respiration of the patient is heard even beyond the apartment he occupies. The dyspnæa becomes excessive, the patient is in a constant state of agitation, his face swollen and livid, his lips purple, and his forehead covered with large drops of perspiration. The skin becomes cool, and the pulse small, feeble, and extremely rapid. The thirst is often excessive, and not the least difficulty is experienced in swallowing the fluids presented. There is often expelled by the cough, or by vomiting, at this period, a quantity of thick, ropy mucus, sometimes mixed with fragments of a membranous appear-These symptoms may continue for a longer or shorter period, according to their intensity:—the voice, however, soon becomes extinct, the respiration short and convulsive, and the patient is every moment in danger of suffocation; his face becomes pale, his eyes dull and inanimate, and his head, face and neck, are bathed in a cold, clammy sweat. There is now but little, if any, cough or expectoration, the pulse is feeble, irregular and intermittent, and the patient

at length ceases to breathe,—the intellect being, in general, unaffected

throughout the attack.

In other cases, however, the disease commences much more abruptly, and proceeds with greater rapidity and violence. The patient, who retired to bed, apparently in perfect health, is suddenly awoke from his sleep with a violent fit of loud, ringing cough; his respiration is loud, wheezing and oppressed, and attended with a feeling of immediate suffocation; there is the utmost anxiety and restlessness; the face is red and tumid, the eyes injected and protruding, and the pulse frequent and hard. These symptoms present not the slightest remission, but increase in intensity, and the patient, in the midst of the most frightful agony, perishes as though from actual strangulation. In these extreme cases, death may occur in a few hours, or the attack

may be prolonged for one or more days.

Between the two forms of the disease we have described, that in which it is gradually developed, and of some duration, and that in which it occurs suddenly, with symptoms of the utmost severity, and runs a rapid course, tracheitis may present very various shades of intensity. Its duration will vary in different cases, according to the intensity of the disease, the age and constitution of the patient, and the nature of the treatment pursued. When attacked, in its early stages, by appropriate remedies, even in the most violent eases, it will often give way almost with the same abruptness that marked its invasion; and in a few hours, the little patient will appear to pass from the midst of health, to a situation in which death seems inevitable, and, again, as quickly to be restored to almost perfect health. The ordinary duration of the disease, is from twenty-four to thirty-six hours; (Royer-Collard;) though cases have been related in which it has been protracted until the twelfth day from its invasion; or the disease assuming a chronic character, it may, it is asserted, continue for two and three weeks. (Albers, Gölis, Marley, Maunsell.) We should very much doubt, however, the correctness of the diagnosis in these

The disease is one that appears to be peculiarly liable to recur in the same individual, after a longer or shorter interval; this fact is noticed by nearly every writer upon the disease; it has been known to recur seven, and even nine times in the same individual. (Jurine, Albers.) The subsequent attacks vary in intensity in different cases; an infant may promptly recover from one, two or three consecutive attacks, and finally be destroyed by a fourth, exceeding in intensity

either of the preceding.

The diagnostic symptoms of croup are, the hoarseness of the voice, the peculiar deep ringing cough, and the loud wheezing or sibbilant inspiration. The hoarseness of the voice is generally among the first symptoms that occur; even, in many cases, being observed previous to the dyspnæa, cough, or febrile reaction. It is at first slight, but becomes more marked in the progress of the disease; not unfrequently, in the second and third stages amounting to an entire

extinction of the voice. In those cases that are preceded for some days by simple cattarrhal symptoms, the peculiar hoarseness of the voice will early warn the observing physician of the true character of the attack. The roughness or hoarseness of the voice, to a certain extent at least, often continues for some time after the tracheitis has

been entirely removed, and it only slowly disappears.

It is extremely difficult to present a correct description of the distinguishing croupal cough. In cases preceded by catarrhal symptoms, a cough is present from the onset of the disease, but it differs in nothing from the ordinary cough of bronchitis; but from the moment that inflammation of the larynx and trachea is developed, the cough becomes deep and hoarse, and with the first accession of the phenomena dependent upon the laryngeo-tracheitis, it assumes the peculiar loud, ringing sound, constituting the proper croupal cough. This sound has been compared to the erowing of a young cock, the barking of a hound, or to a cough heard through a brazen trumpet, these comparisons, however, but illy characterise its deep, ringing resonance. It must be heard, to form a correct idea of it; and, when once heard, it will be searcely possible afterwards to confound it with any other. (Royer-Collard.)

During the paroxysms of the disease, the cough occurs by fits more or less violent and prolonged; during the intervals the cough still retains its eroupal sound, but is less violent; towards the close of the disease, when the natural functions of the respiratory tube have become nearly destroyed, the cough is always entirely suppressed, and looses its peculiar characteristics:—in the event of a favourable termination, the cough very frequently disappears entirely; or, as is more commonly the case, resumes its catarrhal character, and continues to recur for a longer or shorter period. In tracheitis, the paroxysms of coughing, are excited by the most trifling cause, as the

act of drinking, speaking, crying and the like.

The respiration is more or less short and hurried from the commencement of the attack, and the dyspnea augments in intensity with the progress of the disease, being sometimes so great as to threaten, every moment, strangulation. During the paroxysms, inspiration is prolonged, and attended with a loud wheezing, in some eases, amounting almost to a low, lengthened whistle. This wheezing inspiration continues throughout the attack, being less intense, however, during the intervals, and disappearing entirely with the disappearance of the disease.

The hoarseness of the voice, the peculiar croupal cough, and the loud, wheezing and prolonged respiration, are evidently dependent, in a great measure, upon the diminished capacity of the rima-glottidis and trachea, in consequence, in the first instance, of the thickening of the inflamed mucous membrane of these parts, and subsequently, of the pseudo-membranous exudation with which they become covered. But the circumstance of these symptoms, in many cases, becoming aggravated at irregular intervals, divided by distinct remis-

sions, thus constituting, as it were, paroxysms, that commence suddenly, and decline with equal abruptness, have induced many to suppose, and not without good reason, that the peculiar symptoms of croup are, to a certain extent, due to a spasmodic constriction of the muscles of the larynx and glottis. It is probable, however, that it is chiefly the extreme dyspnæa of croup, that is the result of this spasm, and which gives to the disease its apparent paroxysmal character. In the more violent attacks of croup, the dyspnæa commences with the very onset of the disease, and continues, with little abatement, until its close; when, however, the disease is preceded for some days by catarrhal symptoms, the dyspnæa does not occur until somewhat later, and attains its peculiar character only in the second stage; when, during the paroxysms it is only by the utmost efforts that the child appears to be capable of effecting the respiratory movements; the muscles of the face, neck, shoulders, chest and abdomen, are thrown into violent, almost spasmodic action, the mouth and nostrils dilate, the larynx ascends and descends incessantly, the entire thorax is raised, and the shoulders are drawn up at every inspiration. In most cases, the dyspnæa is increased by the horizontal position, and the patient in a state of the most violent agitation, throws his body successively in every position to obtain ease; very generally the head is bent backwards, as it were to augment the size of the larynx, and thus give to the air a more free passage into the lungs; this position, however, is not invariably assumed by patients labouring under croup, and hence, cannot be considered as one of the diagnostic phenomena of the disease. (Royer-Collard.) In the final stage of the disease, the dyspncea is equally intense; but respiration is effected almost entirely by the action of the diaphragm, the contractions of which are violent and convulsive; the cartilages of the ribs, and abdominal muscles, are, at one moment, drawn inwards towards the spine, and at the next, return suddenly to their former position. Ordinarily inspiration is long and almost continuous, endangering, every instant, the suffocation of the patient. In the second, and even at the commencement of the third stage, the dyspnæa may present very distinct remissions; these remissions have occasionally been so complete, that the disease appeared to be suddenly suspended, and the parents have rejoiced at its speedy recovery; nothing, however, is more insidious, than this sudden occurrence of a deceitful calm.

Fever is very generally present in croup; it is in some cases strongly marked, commences with the disease and continues until its closing stage; in others, the febrile excitement is less intense; and again, in what have been termed spurious croups, the laryngeo-bronchial variety of Dugès, there is often, especially in young children, no symptoms whatever of fever. In violent laryngeo-tracheitis, there is frequently pain of the larynx and trachea, in general of an obtuse, rather than an acute character, and increased upon external pressure; in slight cases, of croup, however, this symptom may be wanting. By some writers, a swelling of the neck, at the upper part of the trachea has been

described as frequently occurring; the swelling is represented as varying in size in different cases, of an ædematous character, and disappearing immediately upon the recovery or death of the patient; it must, however, be of very rare occurrence, as we have never had an opportunity of observing it. Vomiting occasionally occurs on the accession of the disease, but is not an invariable symptom, as has been supposed, (Albers,) even in the more violent cases. The fact is, that in these latter cases, vomiting is with difficulty excited, even by the administration of the most active emetics. Occasionally, however, vomiting will be provoked by the violent fits of coughing which occur during the height of the disease; the matters vomited in these cases, are usually a thick, viscid mucus, or muco-purulent matter, mixed with shreds of false membrane, sometimes in the form of tubes or portions of tubes. The discharge of these matters, when copious, is followed by a very marked relief of the dyspnæa and cough, which, however, is never of long duration. The condition of the howels is various; but in the majority of cases, according to our experience, they are more or less torpid. The wrine is sometimes clear, pale and abundant, and at others, small in quantity, thick, and deep coloured; it is very often whitish and turbid, particularly towards the close of the second period. This condition of the urine, however, is neither diagnostic of the disease, nor critical. (Schwilgue.) There is often a disposition to somnolency in the commencement of the disease, which, in some cases, amounts to complete stupor, arising, probably, from a slight congestion of the brain; drowsiness or stupor, however, is by no means an invariable, we should think, not even a frequent, attendant upon croup, as some have supposed, especially in its first and second stages. (Burns, Dewees.) Some have described the senses, as well as the intellectual powers of the patient to be increased in activity, (Cailleau,) but although we have seldom seen the mental powers much impaired throughout an attack of croup, we cannot say that we have observed any increase in their activity.

The pathological changes presented by the bodies of those who have fallen victims to croup, are principally confined to the larynx, trachea, bronchii and lungs. One or other, or all of these, invariably present traces of disease, differing somewhat, according to the intensity exhibited by the symptoms during the life of the subject, and the period at which death has taken place. The lesion most commonly observed, is a pseudo-membranous exudation, covering some portion of the mucous membrane of the respiratory tubes, and an effusion of mucus or muco-purulent matter, filling the larger and sometimes the smaller bronchial ramifications. In cases that have terminated rapidly in death, the exudation is found only in the larynx and upper portion of the trachea; when death has occurred at a later period, it is in the trachea alone, or in the trachea and bronchii that it is detected; it never exists in the bronchii alone. In the larnyx, the exudation is often in the form of a thin coating, extending over the whole of its

internal surface, but more frequently it is disposed in membraniform patches, or is found upon the inferior surface of the epiglottis alone. (Davis.) In the trachea, it often lines the whole of the tube, and varies in consistency and thickness; or patches of the exudation occur here and there, or it appears in the form of soft concretions, resembling polypi, attached to the posterior surface of the tube; or the trachea is filled with a mucuform fluid, containing small masses of a more solid consistence. These same appearances are occasionally found in the upper part of the bronchii, but, more frequently, in the bronchial tubes there is found only a viscid mucus, more or less fluid, and containing often albuminous flocculi. In those cases in which the invasion of the disease has been sudden and violent, and its termination in death, rapid, it is rare to find the exudation assuming a pseudo-membranous appearance; the respiratory tubes in such cases, containing only mucus, somewhat more abundant and viscid than natural. (Martinet.) The larynx and trachea have, however, been found lined with a pseudo-membranous concretion, in cases in which the entire duration of the disease did not exceed twenty hours. (Blaud.) When the fatal termination occurs towards the close of the second stage, the pseudo-membranous exudation very frequently lines the whole of the trachea, and sometimes even the larynx and upper portion of the bronchii, and presents throughout nearly the whole of their extent, considerable firmness. (Bland, Bretonneau.) In cases in which death occurs at a still later period, in the upper portion of the trachea there is found nothing but a quantity of viscid mucus, which becomes more consistent at the lower part of the tube, and often presents here a more or less complete membrane, separated from the mucous membrane by an abundant layer of fluid matter; in the bronchii this pseudo-membrane becomes much softer, and soon looses entirely its membraniform character, the bronchii being filled in their final ramifications, with a thick, ropy mucus. (Royer-Collard.) The colour of the membraniform exudation, is either whitish, yellowish or grey; the part applied to the surface of the respiratory tubes is often marked by slight, bloody striæ or points. It is sometimes very closely adherent to the mucous membrane, but in other cases, there is interposed between it and the surface of the tube a layer of mucus or puriform fluid. It is in some cases soft, and readily torn, while in others it has considerable firmness; it is, in general, most thick and firm in the trachea, particularly at its posterior part.

Some have described the pseudo-membrane of croup as an organized substance, possessing minute fibres and blood vessels, (Vanbergen, Böhmer,) a supposition which is contradicted by the most conclusive testimony. (Royer-Collard.) That in some cases after the cessation of the disease, a portion of the membrane intimately attached to the mucous membrane of the trachea, may remain, and become organized, has, however, been conclusively established. (Albers,

Royer-Collard, Blache, Skiers.)

The chemical composition of the pseudo-membranous exudation of

croup, is the same as that of the diptheritic inflammations generally, and of the pseudo-membranes of serous surfaces, it being composed

chiefly of albumen. (Schwilgué, Bretonneau.)

When the pseudo-membranous exudation, and the viscid mucus are removed from the surface of the respiratory tubes, the mucous membrane of the larynx, trachea and bronchii, are found to be in a state of inflammation throughout the greater part of its extent. When death takes place in the early stage of the more violent cases, the larvnx and upper portion of the trachea are of a deep red colour and more or less thickened. When the disease has continued for a longer period, the redness is less intense; the blood vessels of the mucous-membrane are, however, strongly developed, and when the mucus is scraped from its surface by the scalpel, is of a reddish colour; at a still later period of the disease, traces of inflammation are less perceptible, and often entirely absent. The affection of the bronchii is in proportion to the extent and duration of the disease; the earlier the death of the patient occurs, the less marks of disease are presented by them; the later in the disease the fatal termination takes place the more extensively do they appear to be involved. Cases not unfrequently occur in which their minutest ramifications are filled with a pulpy matter.

Pneumonia is not an unfrequent complication of croup; portions of the lungs being in a state of inflammatory engorgement and hepatization; pleuritic inflammation is also occasionally met with, as well as interlobular and sub-pleural emphysema. (Bard, Jurine, Mathey,

Portal, Mackintosh, Cheyne, Stokes, Boudet.)

The physical signs of croup are not of a very positive character. In the early period of the disease, the stridulous respiration may be detected by the stethoscope, applied to the trachea, before it is otherwise distinct. (Williams.) So long as the disease is confined to the larynx and trachea, upon percussion, no dullness will be found to exist. When bronchitis or pneumonia are present, it will be indicated by its appropriate signs; these, however, may in a great measure, be obscured by the loud sound of the tracheal respiration. In the early stage of the disease, or after vomiting, the tracheal sound being less, the sonorous breathing and rhonchi of bronchitis and the crepitation of pneumonia may be detected, if present. (Stokes.) When the pseudo membrane in the trachea is partially detached, it is said that we may have a clapper or valve-like sound, upon inspiration, when the upper, and upon expiration, when the lower extremity is the one detached and moved by the passage of the air through the larynx. (Maunsel.) We have never ourselves observed this sound.

It is unnecessary to enter into an examination of the various hypotheses that have been emitted in reference to the nature of croup. The investigations of modern pathologists have shown that the disease is an inflammation of the mucous membrane, and probably of the submucous cellular tissue (Ryland,) of the larynx and trachea, and in many cases of the bronchii also. The inflammation, in the first stage of the disease, being confined to the larynx and upper portion of the

trachea, but extending subsequently to the bronchii, often throughout their ramifications, and to the tissue of the lung itself; giving rise in the second stage of the disease, to the exudation of an albuminous fluid, which most generally forms a pseudo-membranous coating upon the larynx, trachea, and commencement of the bronchii; the collapse or adynamic symptoms of the third stage, resulting from the interruption to the function of respiration, and the consequent imperfect hæmatosis, caused by the presence of the exudation, and the congestion of the lungs. As we have already remarked, nearly all the characteristic phenomena of croup indicate that there also exists, a spasmodic affection of the glottis, which, however, is the result of the increased irritability of the parts from inflammation, and probably from the irritation of the morbid secretion, and not, as some patho-

logists have supposed, the chief cause of the disease.

Various divisions of croup, have been attempted, by different wri-By one, it has been divided into three forms, dependent upon the intensity of the inflammation, and the character of the secretion from the inflamed mucous surfaces; the first being a mild form, with the secretion of a moderate quantity of thin, limpid, frothy mucus; the second, a more aggravated form, but still comparatively mild in its progress, and favourable in its termination, with opaque and puriform secretion; and the third, the most aggravated form, with pseudomembranous exudation. (Blaud.) This division, which is of little benefit in a practical point of view, even were it well founded, is not borne out by the results obtained from autopsical examinations. By others, it has been divided into the laryngeal, laryngeo-tracheal, and laryngeo-bronchial, according as the inflammation is confined to, or predominates in the larynx, trachea, or bronchii; this division is a much more accurate one than the preceding. It is probable, that in the majority of cases, the bronchii are the part first affected; in many, however, the disease commences in the larvnx, and we suspect there are few cases in which the disease is confined to the trachea alone. (Dugès.) It has been attempted to be shown, that in the ordinary form of croup, the disease is, in its first stages, a tracheitis alone, and that in the more violent form, (suffocating croup,) it is simply a laryngitis. (Jurine.) Although this is not correct in fact, yet our observations have taught us, that in cases attended with violent symptoms, sudden in their onset and rapid in their progress, there exists, most generally, considerable inflammation with pseudo-membranous exudation about the larynx, glottis and upper portion of the trachea, to a much greater extent always, than in eases in which the disease succeeds to bronchitis, and pursues a less violent and more protracted course.

Another division of croup is into the *sthenic* and *asthenic*; the first occurring in robust and plethoric children, and attended with decided febrile re-action, firm pulse, pain in the larynx, and other indications of severe inflammation; the disease usually occurring as a primary affection; the second form, occurring in debilitated and cachectic chil-

dren, or those reduced by previous disease, and attended with a low, obscure fever, feeble pulse, early collapse, and other indications of asthenia. (Albers, Royer-Collard, Williams.) The first, or sthenic form, corresponds, very nearly, with the primary croup, and the second, or asthenic form, with the secondary croup of medical writers—the second, very generally, resulting from the extension of the pseudo-membranous inflammation of the fauces into the larynx and air tubes.

Upon the termination of the symptoms characteristic of croup, the patient is frequently perfectly convalescent within a very short period; more commonly, however, it is succeeded by a mild bronchitis which continues for many days; in other cases the bronchitis becomes chronic, and occasionally terminates finally in tubercular disease

of the lungs.

Age is evidently the chief predisposing cause of croup. The disease being principally confined to children under fifteen years of age, seldom occurring beyond that period as a primary affection. It is rare in the first months of life, but is met with most frequently in children between one and seven years. By numerous writers, the occurrence of croup previously to the seventh month, has been denied. (Vanbergen, Home, Crawford, Rosen, Cheyne, Michälis, Pinel, Barthez, Cailleau) Others, however, declare that they have met with it repeatedly, as a primary disease, in children at the breast. (Dewees, Marley, Dugès.) In Philadelphia, during the eight years preceding 1840, 286 deaths are reported from croup, in infants under one year of age; 275, in those between 2 and 5 years; 171, in those between 1 and 2 years; 67, in those between 5 and 10 years; and 21 in individuals over 10 years of age. Of 330 cases of croup, presented in a tabular form, by Andral, 141 occurred in infants between 2 and 5 years old; 71, between 5 and 8; 61, between 1 and 2; 36, over 8; and 21 under one year of age. The earlier the children are weaned, the more liable they are said to be to the disease. (Home.) Judging from our own experience, we should say that the croup occurs, more frequently, between the tenth month and fifth year from birth, than at any other period. This is the period also, when children are particularly liable to catarrhal affections, which, in consequence of the tendency that then exists to the exudation of coagulable lymph, in the inflammations of the mucous surfaces, especially those of the respiratory organs, readily assume, in particular constitutions, the croupal character, rendered still more marked and dangerous, by the very great excitability of the mueous tissue in early life, and the imperfect development of the larynx and trachea, and the small size of the glottis. (Albers, Royer-Collard, Cheyne.) Boys would appear to be more frequently affected with the disease than girls. (Jurine, Albers, Blaud, Gölis, Guersent, Ramsey, Boudet.) Of 543 cases of true and false croup, collected by Guersent, 325 occurred in males, and 218 in females; of the 820 fatal cases of croup reported to the Health Office at Philadelphia, during the eight years preceding 1840, 448 occurred

in boys, and 372 in girls. The deaths from croup in the London Hospitals during 1840, were, in the male sex 3, to 1 in the female. Children of a sanguineous temperament, of a florid complexion, inclined to fat, and apparently in the enjoyment of perfect health, are those in whom the croup is most liable to occur as a primary disease, and hence we find of those families in which this temperament prevails, almost every infant attacked with the disease, as it reaches its first or second year. Children are rendered more liable to an attack of croup, when by the improper fashion of their dress, their neck, shoulders, upper portion of their breast and the greater part of their

arms are left entirely bare, or only slightly covered.

The chief exciting cause of croup, is unquestionably, the impression upon the body, of a cold and damp atmosphere or sudden transitions of temperature; hence, we find the disease most prevalent during the variable, damp, and chilly weather, which prevails in the commencement of spring and close of autumn. It is also of much more frequent occurrence, in situations naturally abounding in moisture, than in those of an opposite character. It may be considered as, to a certain extent, endemic in valleys surrounded by high mountains, and in the vicinity of lakes and large rivers. (Home, Dewees, Rush, Currie, Archer, Mackintosh.) It may be produced, however, at any season of the year, by sudden alternations of temperature. Sitting or lying down on a damp grass plat, or in a current of air, after the body has been heated by exercise, or a sudden chilling of the body from any other cause, is very apt to induce the disease. It is also particularly apt to occur, in the course of, or immediately subsequent to an attack of measles or of pneumonia. (Ferriar, Stokes, Marshall, Boudet.) It is said, occasionally, to prevail as an epidemic. (Vanhergen, Rosen, Autenrieth, Jurine, Albers, Boudet.) In many of these epidemics, however, we suspect that the disease was not primary, but secondary croup resulting from pseudo-membranous angina; the latter differs, in some degree, from primary croup; independently of the inflammation of the larvnx and trachea, being secondary to disease of the pharynx and throat, and its occurring always in the course of some other affections, the symptoms are usually of an asthenic character; the deglutition is more or less difficult, the breath fætid, and instead of a tendency appearing in the course of the attack to acute pneumonic inflammation, it is disease of the mucous membrane of the stomach and bowels, with which, in cases of secondary croup, the laryngeo-trachitis is most commonly complicated. Stokes enumerates other points of difference, which we do not recognize, as, for instance, the contagiousness of secondary croup, and its chiefly affecting adults. Under no circumstances, do we believe croup to be contagious; even when it accompanies or succeeds to small pox, measles, or scarlatina, it is scarcely correct to refer it to contagion, merely because the affection which it accidentally complicates, is in this manner propagated. Secondary croup, as well as angina membranacea, is also much more frequent in children than in adults; it is very

probable that the cases of croup that have been described by Dewees, Dugès, Marley and others, as occurring in infants under seven months of age, were produced by the extension of pseudo-membranous inflammation from the fauces to the larynx and trachea; it is certain, that in the numerous instances in which secondary croup has occurred during epidemies of searlatina and small pox, the patients have been

chiefly infants. (Boudet, Schmidt.)

The treatment of eroup varies somewhat, according to the stage of the disease, and the violence of the attack; in mild cases, or in the early, or forming stage, an active emetic, followed by immersion in the warm bath, and subsequently the exhibition of small doses of antimony combined with calomel, will, in many instances, put a stop to the further progress of the disease. Nearly every writer upon the disease, has spoken of the good effects of emetics, administered in the cases and at the period noticed; much discrepancy of opinion, however, exists as to the best emetic to be employed; by the majority of physicians, the tartarized antimony is preferred, but others refer a peculiar efficacy to the sulphate of copper; (Hoffman, Droste, Fielitz, Steinmitz;) others to the sulphate of zine. (Smith, Farre, Francis.) Some of the American practitioners esteem the sanguinaria Canadensis, in infusion, as almost a specifie, (Tully, Smith and Ives, of New Haven, and Andrews of New York,) while a few prefer the lobelia inflata. The great objects to be kept in view, in our choice of an emetic in eroup, is the promptness, certainty and activity of its operation, and these properties being combined in the tartarized antimony, we have invariably preferred it in the commencement of the attack. In many of the milder eases, the compound honey of squill, given in a sufficient quantity to operate freely as an emetic, and eontinued subsequently in nauseating doses, will, very effectually, cut short the disease. The only writer whom we have met with, that condemns emeties in the treatment of eroup, is Goodlad.

*R.—Ant. tartaris. gr. iij.

Aquæ, ʒij.—M.

A tea spoonful to be given every five or ten minutes, until full and repeated vomiting is produced.

In cases of greater violence, or in which the emetic, given in the forming stage, has failed to arrest the disease, our most effectual remedy is, unquestionably, blood letting. In many cases, the application of a sufficient number of leeches to the throat, will be sufficient, but in every instance in which the disease is marked by symptoms of considerable severity, or the patient is robust and plethorie, the pulse hard and full, and the dyspnæa very considerable, blood should be drawn from the arm, to an extent sufficient to make a decided impression upon the symptoms, but never if possible, to the extent of inducing syncope; and if the symptoms should again recur with any degree of violence, the bleeding should be repeated, or leeches should be applied around the throat, in numbers proportioned to the age and strength of the patient, and the intensity of the disease. The repetition

of the bleeding must be governed by circumstances; in some cases, one bleeding, if of sufficient extent, will most effectually control the symptoms; but in others, we must bleed again and again, if the system reacts with force, the pulse continues firm, the skin warm, and the dyspnæa considerable. (Dewees, Royer-Collard, Currie.) There is certainly, no discase, in which bleeding, when well timed, and carried to a sufficient extent, is calculated to produce more beneficial effects. The practitioner, who in violent cases of croup, neglects this important measure, and places his hopes on any other remedy, or combination of remedies, will have but little reason to flatter himself upon his success in the management of the disease. This assertion is based upon a tolerably extended personal experience, as well as upon the recorded experience of nearly every American practitioner, and a majority of the most authoritative of the practitioners of Europe. But, it must be recollected, that it is in the first stages, that the bencficial effects of blood letting are to be obtained; if it be then neglected, or timidly practised, the time for its employment will have passed, and in those cases in which it is strongly indicated, there will be but little hopes of arresting the fatal termination, by whatever remedial measures may be resorted to. (Currie, Kuhn, Dick, Chapman,

From the difficulty often experienced in obtaining blood from the arm, in young children, it has been recommended to open one of the jugular veins; (Cheyne, Goodlad;) others, however, have objected to the operation, from the difficulty of measuring the quantity of blood drawn, and of arresting the bleeding when a sufficiency has been obtained. We have repeatedly drawn blood from the jugular veins, in violent cases of croup, and with very decided advantage; the promptness of the relief has occasionally been very striking. We have never experienced any difficulty in performing the operation, or in arresting the bleeding; and as to the extent of the bleeding, this being measured not by the number of ounces of blood drawn from the patient, but solely by its effects upon the disease, we have had no more trouble in judging of this when the jugular vein was opened, than when the bleeding has been performed from a vein in the arm,

back of the hand, or foot.

Immediately after the first bleeding the exhibition of an emctic and immersion in the warm bath will prove powerful auxiliaries. It often happens that an emetic exhibited upon the accession of the disease, will not operate, sometimes not even excite nausea, until the patient is bled and the warm bath employed, when immediate copious vomiting will occur, and render the repetition of the emetic unnecessary. After the patient is removed from the warm bath, he should be placed in bed and enveloped in blankets, the perspiration induced by the bath and emetic being encouraged by the employment of divided doses of tartarized antimony; we generally combine the antimony with calomel and hydrochlorate of ammonia.²

*R.—Calomel. 3ss. ad 3j.
Tart. ant. gr. j.
Hydrochlor. ammon. 9 ijss.—M. f. chart. No. xij.
One to be given every two hours.

The employment of nauseating doses of antimony subsequently to full vomiting and sufficient depletion by the lancet, has the sanction of the best writers upon the disease. Cheyne declares, that he has found no other remedy worthy of confidence in the second stage of croup, an assertion which we consider, judging from the result of our own experience, scarcely too strong. Stokes places it even above blood-letting. Steinmitz trusted to it alone in the second stage, as also did Jadelot, who combined the tartarized antimony with ipecacuanha, squill, and senega. Cheyne also speaks highly of the efficacy of the tartarized antimony, both as an emetic, and in nauseating doses throughout the first and second stages of croup. A recent writer (C. Wilson) gives the tartarized antimony throughout the disease, at first in doses of a quarter or third of a grain every hour, until a decided impression is produced upon the symptoms, and subsequently every two hours. Combining the article with calomel, we have certainly found to increase, very materially, its efficacy. Of the good effects of calomel in croup, we have abundant testimony. Given in large doses and at short intervals, it is the remedy upon which many physicians have almost exclusively depended for the cure of the disease; while in somewhat smaller doses, after bleeding, an emetic and the warm bath, it is strongly recommended by a host of authorities. (Kuhn, Bond, Bard, Rush, J. Hamilton, J. P. Frank, Michalis, Authenreith, Currie, Hosack, Dewees, Olbers, Albers, Ryland, Bretonneau, Guersent, Mackintosh, Billard, Chapman.) Some of these have directed the calomel in enormous doses, far greater than we should be inclined to prescribe; notwithstanding we still believe that the good effects of the remedy, in a disease of such rapid progress as croup, can be obtained only from its free administration.

*R.—Infus. senegæ, Ziv.
Syrup. ipeeae. Zj.
Oxy. seillæ. Ziij.
Tart. ant. gr. jss.—M.
A teaspoonful every ten minutes.

After the first bleeding, the operation of an emetic and immersion in the warm bath, from two to five grains of calomel may be prescribed every two hours, so long as the symptoms of the disease continue with any degree of violence; as these subside, the dose of the remedy may be reduced, or it may be exhibited at longer intervals. We have generally found, however, that when the use of the calomel produces at an early period, deep green discharges from the bowels, it is better to reduce the dose; or if frequent green discharges still occur under its use, to discontinue it entirely; we have in no instance seen any bad effects from the employment of calomel in this man-

ner, but often the most decided benefit. Its tendency is to reduce the laryngeo-tracheal inflammation, and thus to counteract the pseudo-membranous exudation.

The hydrochlorate of ammonia appears to us to be a remedy well adapted to nearly all the inflammations attended with diptheritic effusions; we have employed it pretty extensively for many years in croup, and have always been pleased with its effects. Chamerlat recommends it as almost a specific, when employed as a wash or gargle.

Blisters to the throat are strongly recommended by many practitioners in the treatment of croup. (Currie, Hosack, Cheyne, Farre, Royer-Collard, Burns, Eberle.) Mackintosh confines their application to the first stage, after the violence of the disease has been reduced by bleeding and leeching. Dewees doubts their utility; and Goodlad, Stokes, and Porter condemn them entirely. have occasionally employed them, but cannot say that we have perceived any benefit to result from their use. Rubefacients, followed by warm fomentations or emollient cataplasms to the throat, have certainly, in the forming stage of the disease, been often productive of the best effects. As a rubefacient, the spirits of turpentine is the one we have generally employed; its action upon the skin is prompt and sufficiently powerful; a strip of flannel wet with the turpentine may be applied around the neck, and kept on for ten or fifteen minutes; it may be reapplied at short intervals, from time to time, if necessary. In very violent cases, in the incipient stage of the disease, even rubefacients should not be applied to the neck until after blood-letting. When the disease persists, after the use of the lancet, leeches, emetics, and calomel, very great advantage will often be derived from a tobacco cataplasm, composed of the moistened leaves of tobacco, mixed with the crumb of stale bread or ground flaxseed, and applied around the throat. The effects of the cataplasm should be carefully watched, lest its depressing effects be carried too far.

After effusion has taken place, our chief dependence is to be placed on the use of calomel and tartrate of antimony; the latter being occasionally carried to a sufficient extent to excite vomiting. The administration of repeated emetics in this stage, was the practice pursued by Jadelot, Steinmitz, Cheyne, and Currie, and the result of their experience is certainly decidedly in its favour. Tartrate of antimony was the article employed by these physicians; and Cheyne states, that the only cases he saw recover from the second stage of the disease, were those in which the patient was kept under its effects for two or three days. Fielitz, Hoffman, and Droste employed the sulphate of copper in the dose, of one fourth to one half of a grain every two hours. It is in this stage that the tincture of lobelia will often be found advantageous; or, perhaps, the infusion of the sanguinaria canadensis." We know nothing of the latter remedy from our own experience; it comes to us, however, very highly recommended by respectable practitioners. It often happens from the impediment to hæmatosis, produced by the effusion within the respiratory tubes,

and the venous congestion of the brain, that emesis is with difficulty produced, even by very considerable doses of antimony; it has, under these circumstances, been recommended to employ the sulphate of zinc or copper in solution, alone, (Francis,) or combined with ipecacuanha. (Farre.)

aR.—Rad. sanguinar. canadensis, pulv. Əj.

Aquæ calidæ. Ziij.—M.

Dose — A teaspoonful every half hour.

Dose.—A teaspoonful every twenty minutes.

In conjunction with emetics, either in full or nauseating doses, and calomel, the frequent use of warm sinapised pediluvia, will generally

be found advantageous.

After the violence of the disease has been to a considerable extent reduced, or the case has assumed a somewhat chronic character, when a dry, hoarse cough, with oppressed breathing, increased at intervals, but with little febrile excitement or tenseness of pulse, remains, a strong decoction of senega will be often found a useful auxiliary to the other remedies.² (Currie, Chapman, Royer-Collard.)

*R.—Rad. polygalæ senegæ, 3j.
Aq. bullient. Oj.
Simmer to 3xij. then add Mellis. 3iij.
Dosc.—One, two, or three teaspoonfuls, every one or two hours: according to the age of the patient, and the urgency of the symptoms.

In the third stage of the disease, blisters may be applied at the upper part of the cliest, or between the shoulders; sinapisms, or cloths wet with hot turpentine, or the decoction of turpentine and cantharides, may be applied to the extremities, and internally a strong decoction of senega, with the addition of camphor and assafcetida, may be resorted to; and if there is great and increasing exhaustion, it will be proper to support the patient's strength by ammonia or wine-whey. (Olbers, Stokes.) Occasionally, even under apparently the most desperate circumstances, recovery will ensue; but seldom, when the disease has reached this stage, will its fatal termination be arrested by any course of treatment. Of the effects of musk, given in large doses, from twelve to twenty-four grains in the course of twenty-four hours, in the latter stage of croup, we have certainly very strong testimony. (Olbers, Albers, Royer-Collard.) Assafætida, likewise, has been extolled, given as well by the mouth, as by injection into the rectum, to the extent of half a drachm to a drachm a day. (Jurine, Vieusseux, Royer-Collard.)

By some of the European physicians, the employment of cold effusions upon the back, from the occiput to the sacrum has been strongly recommended in cases where every other remedy has failed to afford relief. (Schmidt, Baumbach, Müller, Harder, Aberle.) The immediate effects ascribed to cold affusion, are certainly surprising, but the result of the practice is not such as strongly to press it upon our atten-

tion.

The operation of tracheotomy has been suggested by some as a last resource in cases of croup, and by others as a measure that

should be resorted to before effusion has taken place in the trachea. Among the advocates of the operation are Home, Huxham, Caron, Maingault, Hosack, Farre, Maslhieurat, Berard, Petel; while it is opposed by Crawford, Ferriar, Cheyne, Vieusseux, Double, Albers, Jurine, Royer-Collard, Porter, Bricheteau, Becquerel, Boudet, and others.

The following table exhibits a tolerably fair estimate of the ratio of success which has attended the operation, in the hands of the different operators whose names are given.

								(Operations	. Cures.	Deaths.
Amussat,					٠				6	0	6
Baudelocque,				٠		٠			15	0	15
Blandin,									5	0	5
Bretonneau,						٠			18	4	14
Gerdy, .			٠						6	4	2
Guersent,									9	0	9
Maslhicurat,			٠				٠		2	1	1
Petel, .									6	3	3
Roux, .									4	0	4
Trousseau,	٠								109	27	82*
Velpcau, .					٠				6	0	6
									186	39	147

In the cases in which tracheotomy was performed by Guersent and the hospital internes, in the Parisian Hospital for Children, during the year 1841, the operation, while it was of no advantage whatever, when the pseudo-membranous exudation extended into the bronchii, appeared, in many cases, to accelerate the fatal termination, by inducing severe bronchitis, or an excessive secretion of mucus in the bronchii, pneumonia, or convulsions; while in many cases the patient died immediately after the operation, without any local lesion existing, to which the fatal termination could be referred. (Becquerel, Boudet.)

We have said nothing, as yet, on the subject of diet in croup. During the forming stage, the diet should be the same as in violent cases of bronchitis; during the heighth of the disease, little or nothing else should be allowed, than some mild, mucilaginous fluid, given in small portions at a time; while after the disease has been subdued, and throughout the period of convalescence, the child should be allowed the mildest and most unirritating articles of food, care being taken that even in regard to these, no excess be committed.

For a long time after recovery, there is very considerable danger of a relapse, upon the slightest exposure to cold or moisture, or to the most trifling transitions of temperature; from these, therefore, the child who has recently recovered from an attack of croup, should be carefully guarded, by appropriate clothing, and every other

^{*} Journ. des Connaiss. Medico-Chirurg. Oct. 1840.

judicious precaution. The daily use of the warm bath, and daily exercise in the open air, during mild and dry weather, should never be neglected.

8.—Laryngismus Stridulous—Spasmodic Croup.

(THYMIC ASTHMA.—MILLAR'S ASTHMA.—SPASM OF THE GLOTTIS.)

This disease, which consists in a sudden spasmodic closure of the glottis, giving rise to a severe paroxysm of dyspnæa, and a peculiar crowing sound in inspiration, as if from strangulation; unattended with fever, and often without any material derangement of the general health, is of much more frequent occurrence than is generally supposed. It has very frequently been mistaken for and treated as croup, and in its milder form, it has received the vague term of "inward fits."

The disease generally comes on suddenly; the child, apparently in perfect health, is suddenly seized, either upon awaking from sleep, or in taking drink or food, or upon being teazed or irritated, with a difficulty of respiration; inspiration being often entirely suspended for a few seconds: after violent, even convulsive, struggles, the child finally succeeds in getting breath, with a shrill crowing sound, not unlike the ringing inspiration of the whooping cough. In severe attacks, during the vehement efforts at inspiration, the whole of the respiratory muscles are thrown into violent action. The nostrils are dilated, the mouth is extended, the eyes are rolled upwards, and the whole countenance expresses the utmost anxiety and suffering. The head is thrown backwards; and the chest upwards; the diaphragm and abdominal muscles contract violently, and even the extremities become rigid. The face is commonly pale, or of a livid cadaverous hue, and the external veins, turgid with highly carbonized blood, form black streaks upon the forehead and temples, which continue long after the cessation of the paroxysms. (Ley.) The backs of the hands and insteps are often swollen and hard; the thumbs are rigidly contracted, and locked across the palms of the hands, and the toes are bent down towards the soles of the feet; the wrists and ancles being rigidly and permanently bent by the action of the flexor muscles; in many cases, these carpo-pedal contractions are of a very singular appearance, and in the opinion of some, characteristic of the disease; (Rees;) the fingers being extended upon themselves, but semiflexed upon the metacarpus, and this at times, upon the carpus; in the same manner the toes are flexed upon the metatarsus.

The attacks of the disease are paroxysmal, and vary in duration and intensity. At first a single paroxysm may occur, and after a short time cease spontaneously, and the breathing of the child, at first somewhat hurried, soon becomes perfectly free and regular, and the child presents no apparent indications of disease; and days, and even weeks may pass without the occurrence of another paroxysm; but in other cases, the paroxysms recur with alarming frequency, and are

protracted to fifteen or thirty minutes, or even longer; finally, in many cases, the paroxysms recur with such rapidity, that there is scarcely a complete interval; their intensity and duration increasing, generally, with their frequency. In the early periods of the disease, the paroxysms usually occur in the night, or after a tranquil sleep, from which the child awakes as it were in a fright, and the difficulty of inspiration immediately ensues; but when the disease is more fully established, the paroxysms take place at all times of the day or night. Other symptoms are noticed as of constant or occasional occurrence, as a thrusting out of the tongue between the lips, which is also present to a certain extent during the intervals of the paroxysms; (Kopp;) an involuntary discharge of the contents of the bladder and bowels; (Hirsch;) and, in severe cases, a convulsive contraction of the muscles of the hands, and abductors of the thumbs, during the intermissions. (Caspar.)

Immediately preceding, as well as subsequently to, a paroxysm, the sound of the patient's breathing is that which would result from an increased secretion of mucus in the respiratory tubes. (North.)

The patient may expire during the first paroxysm of asphyxia; or the disease may be protracted to many days, weeks, or months, and death be preceded by convulsions, deep coma, hydrocephalic symp-

toms, or those of acute meningitis.

The appearances upon dissection are very various; the thymus and cervical glands are often enlarged or in a state of disease; the heart is often found empty and flaccid; the lungs are generally gorged with dark coloured blood; the vessels of the brain are also often unduly distended, and serous effusion between the membranes, in the ventricles, or at the base of the brain, is of frequent occurrence; tubercles of the brain are often met with, and occasionally, hypertrophy, or induration of its substance. The foramen ovale is often found open, and not unfrequently, there exists more or less disease of the gastrointestinal, and in some cases, of the respiratory mucous membrane. No one of these morbid appearances is constantly present in the bodies of those who have died of laryngismus stridulous, perhaps, judging from the cases on record, most of which have been adduced, however, to support particular pathological views; we ought to enumerate enlargement of the thymus, and effusion within the cranium, as among those most commonly met with; upon a more minute inquiry, we suspect that enlargement of the thymus gland will be found a much less frequent accompaniment of the disease than has

The disease is almost exclusively confined to the period of infancy and childhood; it may occur at any period from within a few days after birth, (Kerr.) to three years, but most commonly between the fourth and tenth month. Most of the writers enumerate the lymphatic temperament as one of the predisposing causes of laryngismus stridulous, and hence we find it attacking almost all the children of some families, while those of others are entirely exempted from it;

the predisposition from organization may also account for its greater prevalence in some localities than in others. Thus it is generally admitted that the disease prevails much more in cold and damp, than in temperate or warm climates. Dentition is, unquestionably, one of its most common predisposing causes; nearly all the cases upon record occurred during, or immediately preceding the evolution of the first set of teeth; and we have but few instances of the disease occurring beyond this period. Among the exciting causes may be enumerated sudden motions, or any agitation of the body, improper food, fright, or any violent or sudden mental excitement; impure, confined, or some particular condition of the atmosphere, exposure to a current of cold air, efforts to swallow, or even suddenly stooping to pick semething from the ground.

North includes it among the premonitory symptoms of convulsions, and Beatty, in many instances, as one of the earliest symptoms of incipient hydrocephalus, which accords with our own experience.

Laryngismus stridulous, as we have already remarked, consists essentially, in a spasmodic closure of the glottis, impeding the ingress of air into the lungs, and sometimes so completely closing it, as to suspend, for a few seconds, the respiration entirely. Mr. Lee, however, denies that the difficulty of inspiration is owing to a spasmodic closure of the glottis, but rather to the inability of this part to enlarge to its normal size, owing to the want of innervation in consequence of pressure upon the nerves from diseased glandulæ concatenatæ; from the same cause, he conceives, the transverse fibres, behind and connecting the rings of the trachea, lose their contractile power, and allow the sputa to accumulate, giving rise to the rattling sound heard in the upper part of the trachea, particularly when the patient is asleep. Few, however, have adopted these views of Mr. Lee, the spasmodic character of the disease being admitted by the generality of those who have studied its phenomena with care. Upon the nature of the cause, by which the spasmodic affection of the glottis, is produced, there exists a very great diversity of opinion. By the greater part of the German medical writers, and many of those of Great Britain, it is referred to an enlarged or diseased condition of the thymus gland, and numerous observations have been recorded, in support of this hypothesis. (Kopp, Frank, Kirmaul, Hirsch, Ecke, Van Velson, Most, Kill, Montgomery, Hughes, Flackman, Rees, Mitchell.) This view of the pathology of the disease would appear to be very fully made out, were we to take only the quantity, without reference to the quality of the evidence, upon which it rests. But, when closely investigated, it will be found defective, in many important points.

There has not been adduced a single well established fact, to show that a hypertrophied condition of the thymus is capable, under any circumstances, of exerting upon the nerves which pass in its vicinity, such a degree of pressure or irritation, as would produce the phenomena of the disease, under consideration. We have, in fact, numerous observations upon record, which prove, that the thymus gland

may be greatly enlarged, and that numerous enlarged lymphatic glands may exist in the course, and in immediate contact with the laryngeal nerves, without the disease, even in its mildest form being produced. (Pagenstecher, Marsh, Burgess, Johnson.) We are, in fact, so little acquainted with what constitutes the exact normal size of the thymus gland—it being found to vary materially in bulk and weight, in different subjects, during a state of apparently perfect health,—that it is very difficult to determine, with certainty, when it is to be considered of abnormal magnitude, or of a normal size. From our own observations upon the relative size of the thymus, at different ages, from birth to puberty, we are strongly inclined to believe, that, in many of the cases, recorded as instances of enlarged thymus, the gland was either not at all affected, or was actually below the size which it generally presents, in children of the same age. We are to recollect, also, that its enlargement, even when it occurs, may be the effect, and not the cause of the morbid phenomena. It may be the natural effect of the violent convulsive efforts at inspiration, observed in this terrific malady. The thyroid gland has been known to become and remain enlarged, in like manner, after the efforts of severe and protracted labour; the eves to become blood-shot from hooping cough; the eyelids to be distended with blood from epilepsy, and from the efforts of vomiting and parturition. In this manner, we can readily understand how enlargement of the thymus may be an effect of laryngismus stridulous, and subside with the disease, which would not be the case if it was dependent on change of structure. (M. Hall.) Numerous cases are on record, in which the disease was produced, entirely independent of the slightest enlargement of the thymus, or of any of the cervical glands. (Beatty, Rullman, Toogood, Burgess, Ryland, Marsh, Recs.) The agency of hypertrophy of the thymus gland, in its production, is denied by Caspar, Pagenstecher, Ley, Hall, Merriman, Fricke, Oppenheim, Cheyne, and Clarke. Mr. Ley attributes it to a suspended or impeded state of the functions of that portion of the eighth pair of nerves, which is distributed to the larynx, caused by pressure from enlarged, cervical, and bronchial glands; while Marsh refers it to an irritation, seated at the origin of the pneumogastric nerve, and others to disease of the brain. (Clarke, Cheyne, Beatty, Rullman, Fricke, Oppenheim.) According to Dr. Hall, the disposition to spasm of the glottis consists in a peculiar susceptibility of the excito motor property of the nervous system. The immediate cause of the attacks being the action of sources of irritation, or excitement of this property; the most obvious of which are dentition, indigestible food, morbid alvine matters, external agents, and mental emotions. Nearly the same views are expressed by Mr. Ryland; in one case related by him, however, the latter is inclined to believe, that the main cause of the paroxysms was to be referred to bronchial inflammation, which Mr. Ley also enumerates as an occasional exciting cause of the disease. This conclusion is probably correct; for many cases are on record, in which the paroxysms were first observed, in the early stages of pertussis, or of measles, or upon the occurrence of an attack of bronehitis; it is in such cases, that the

disease has been most usually mistaken for eroup.

Our own observations incline us to adopt the views of Dr. Burgess, namely, that, when it occurs previous to dentition, the chief exciting causes of the disease are irritation of the digestive organs, a cold, eonfined, or impure atmosphere, and dentition; but that when it occurs during and subsequent to dentition, it is almost invariably symptomatic of eerebral disease. Nearly the same views are expressed by Mr. Rees; he refers, it is true, the disease, previous to dentition, invariably to enlargement of the thymus gland, or enlarged agglomerated glands, in the vicinity of the recurrent nerves; but observes, that one remarkable point, in these cases, is the dependence of the paroxysms of dyspncea upon the state of the digestive organs; whenever these are out of order, the intensity of the attacks being increased, which it seems difficult to account for, since, he adds, the affection so evidently depends upon a mechanical cause. The same difficulty, he further remarks, presents itself, in accounting for the constant and immediate good effects obtained from a change of air. The difficulty, however, arises solely from the attention of the observer having been too exclusively directed to the supposed agency of glandular enlargement, in the production of the disease. We have, in repeated instances, seen the most severe attacks of laryngismus stridulous produced solely from irritation of the alimentary eanal, resulting from indigestible and improper food, and other errors of diet, or from the influence of an impure, irritating, and confined atmosphere, and promptly and effectually relieved, in its early stages, by getting rid of the exciting eause in the stomach and bowels, or by removal to a pure and wholesome atmosphere.

The eases combined with cerebral disease, are seldom met with, until dentition has commenced; if the patient survive the appearance of the first molar teeth, the case generally terminates favourably. (Rees.) In this form of the disease, the patient generally remains, during the intervals, dull, heavy, listless, and drowsy; the pupil of the eye is dilated; the head hot, and frequently held extended on the spine; and unless appropriate remedies be resorted to, convulsions or inflammation of the brain is always liable to supervene; carpo-pedal spasms, also, frequently occur. These are generally attended with considerable derangement of the gastro-intestinal mucous membrane. (Rees.)

Several eases are recorded, in which spasm of the glottis was evidently induced by an irritation eaused by the arrest of some foreign body, in the œsophagus, which, nevertheless, could not have produced sufficient pressure upon the larynx, to interfere, in the least, with the freedom of respiration, but must have excited, by some remote, and as yet unexplained influence, a spasmodic closure of the glottis; giving rise often to symptoms of such intensity, as to require an ope-

ration to preserve life. (Porter.)

The prognosis will depend entirely upon the nature of the lesion by

which the spasm of the glottis is produced. In cases in which the disease has resulted from a temporary irritation of the alimentary canal, or other slight functional disturbance, the paroxysm may be but of short duration, and the attack cease spontaneously, or upon a proper change of diet or air; but when symptomatic of disease of the brain, or any permanent irritation of other organs, it is always to be considered as a serious affection, and very frequently proves fatal.

The treatment, during the paroxysm, consists in placing the patient in an upright position, with the head slightly inclined forwards, and exposed to a full draught of fresh, cool air, while cold water is, at the same time, sprinkled over the face. Every means should be taken to remove, as far as possible, compression from the vessels of the neck: -slapping the child slightly on the back, will occasionally aid in removing the spasm; frictions along the spine may, also, be resorted to. If the paroxysm does not yield to these means, the patient should be placed in a warm bath; whilst in the bath, cold water should be sprinkled on the face, which will generally cause a strong inspiration and lengthened expiration, followed by a scream, which usually puts a period to the paroxysm. (Ley.) It may be, also, useful to apply ammonia, if at hand, to the nostrils. Irritation of the pharynx, by a feather, will sometimes induce vomiting, which will, of course, solve the spasm of the glottis. (Johnson.) An enema, with the addition of assafærida or turpentine, will be useful, in violent attacks. If the dyspnæa continue unabated, and death from asphyxia is threatened, the operation of tracheotomy should be immediately performed. (Marsh, Porter.)

If, during the paroxysm, there is evident congestion of the brain, a few leeches behind the ears, with cold lotions to the scalp, will be

found advantageous.

The moment the fit is over, an examination of the gums should be made, and if these are found to be, at any part, swollen or inflamed, a free incision should be made, down to the tooth. Dr. Hall recommends incision of the gums, not only in cases of actual dentition, but in cases in which no immediate appearance of the teeth is expected, or even in cases in which all the teeth have already appeared. He directs this, for the purpose of correcting a state of the bloodvessels and nerves of the gums, which, though physiological, borders on a pathological character; and hence he prescribes it to be repeated, for several successive days.

The bowels of the patient should be well moved daily. But, in accomplishing this, all irritating remedies should be avoided, and we must be careful not to produce severe purging which, by exhausting the patient, will augment the susceptibility to subsequent attacks. When the discharges from the bowels are of an unhealthy character, small doses of calounel, or of the blue mass, combined with ipecacuanha and extract of hyosciamus, repeated at short intervals, and an occasional dose of the infusion of rhubarb, with tartrate of potass and manna, will, in general, answer our purpose. To the last mentioned prescrip-

tion, it has been recommended to add a few drops of tincture of hyosciamus, and of the aromatic spirits of ammonia, and a little of the syrup of ginger. Dr. Hall considers a most important remedy in these cases, especially when the evacuations are clay-coloured, to be the repeated use of enemata of warm water or barley water.

*R.—Calomel. gr. vj. ad xij.

Ipceae. pulv. gr. iij.

Ext. hyosciami, gr. iv.—M. f. chart. No. xij.

One to be given every three hours.

Or, Mass. f. pill. hydrarg. gr. xij. may be substituted for the calomel.

The importance of an attention to the diet of the patient need not be insisted on; nor need we, after what has been already said in many of the preceding sections, lay down any precise directions, in regard to the proper articles to be employed. The repetition of the attack, remarks a writer, whose therapeutical directions in respect to the disease under consideration, are replete with good sense, (Hall.) has so often, within my own experience, been the result of improper and indigestible food, that I invariably fix upon some one article or kind of diet, of the most unquestionable character, to the exclusion of all others.

The importance of a pure, fresh, dry, and warm atmosphere, in cases of laryngismus stridulous, is recognized by nearly every writer on the disease. A very slight vitiation of the air will frequently bring on the most violent attacks which are as quickly terminated by its removal; in one case, a paroxysm was induced, whenever the child was brought into a newly painted house. (Marsh.) When the little patient has been long free from attacks, a sudden change of the wind to the north-east frequently induces a return of them; and even when they have been long obstinately repeated, and have become, as it were chronic, a change of air has induced as suddenly a suspension of them. (Hall.) We have known a recurrence of the paroxysms to be kept off, so long as the patient remained in the city, and to happen whenever the child was taken into the country. Change of air, with a well regulated diet, is often more effectual than any other means, in preventing the renewal of the paroxysms; but where this cannot be effected, the child should be taken out daily, in mild, dry weather; and the apartment it occupies should be freely ventilated, and kept strictly clean; care being taken, in so doing, to prevent exposure to partial currents, and to guard against dampness. The clothing of the child should be adapted to the state of the weather, and temperature of the season, and so made as to guard the breast, shoulders, and arms, against exposure to cold or draughts of air. The use of the warm bath daily, as in most of the diseases of children, is an important prophylactic means.

There is one cause capable of exciting the paroxysms in infants, which, though too often overlooked, should be kept constantly in mind by the medical practitioner; and that is sudden, mental emotion, and especially fright, or that state of nervous excitement, into which young

children are often thrown, when thwarted, teazed, or vexed. The infant should not be suddenly awaked out of sleep, nor slapped, nor harshly scolded by an angry nurse. When the latter is out of temper, there is frequently a double source of injury-her rude treatment of the infant, and the unwholesomeness of her milk. The slightest alarm is still more serious in its effects; all sudden noises, all rapid movements in nursing, every attempt to frighten or surprise the infant, should be carefully avoided. It should be addressed invariably, in a soft, soothing tone of voice; in a word, every source of mental emotion should be carefully avoided. This advice should be strongly enforced by the physician, for though important, in reference to every infant, it becomes doubly so, in reference to such as are predisposed to, or have already suffered from an attack of laryngismus stridulous. It has happened to us to see in several instances, most violent paroxyms, though in none attended with a fatal result, excited solely by mental emotion and fright. It has been suggested to subdue the morbid susceptibility of the patients, by keeping them for some time constantly under the gentle influence of the tincture of hyosciamus, and the infusion of hops. (Hall.) The tonic influence of tepid salt water, applied to the surface by sponging, is also highly beneficial.

In those cases in which there is an evident tendency to cerebral disease, the proper remedies indicated by its nature and extent, should be immediately resorted to. In all cases, if we direct our attention to the congested condition of the brain, we shall perceive the importance of adopting measures to relieve it; under ordinary circumstances, the spirit lotion applied to the head, and repeated several times, in the course of the day, is an efficacious means of effecting this, and perhaps a much safer remedy than depletion, which, unless there is an absolute necessity for resorting to it, should be avoided, in consequence of its tendency to increase the susceptibility of the nervous system, and consequently the disposition to an attack. In severe

cases, the ice cap should be applied. (Hall.)

A variety of remedies have been recommended, either with the view of controlling the spasmodic affection of the throat, as the aqlauro-cerasi in small and graduated doses, musk, zinc, (Hirsch.) the cyanuret of zinc, (Pagenstecher.) or for destroying the predisposition to and cause of the disease; as a very low diet, copious and repeated local bleedings, issues on the chest, frequent, active purgatives, mercury, antimonials, cicuta, digitalis, animal charcoal, and iodine, internally and externally. (Hirsch.) To the greater part of these we object, as altogether unadapted to the disease, or positively prejudicial, while the recommendation of others is evidently based upon an erroneous pathology, and even by the strongest supporters of that pathology, they are admitted to be of doubtful efficacy.

9.—Pertussis.—Hooping Cough.

The hooping cough is usually described as a disease, peculiar to

childhood; occurring but once in the same individual, and propogated by a specific contagion. That it occurs most commonly, at some period previous to puberty, is unquestionably true; we have, nevertheless, repeatedly met with it in adults, particularly when it has prevailed epidemically; and the memory of every practitioner will furnish him with instances of its occurrence, in even elderly subjects. (Maunsell, Eberle, Mackintosh, Williams.) Herberden saw it in a female of seventy, and in a man of eighty years of age. Instances of its recurrence in the same individual are, by no means, unfrequent; we have seen several, and the fact is noticed by various writers. (Morris, Mackintosh, Stewart, Williams, W. England.) As to its contagious nature, notwithstanding it is so considered by the generality of writers on the disease, the fact is very far from being fully established, and is positively denied by a large number of accurate observers, who have particularly directed their attention to the subject. (Stoll, Sprengel, Dewees, Laennec, Wendt, Billard, Gardien.) The hooping cough most commonly prevails as an epidemic, and hence a number of individuals may be attacked at the same time, or in quick succession; but to prove its contagiousness, it is necessary to show, that when sporadic cases occur, the disease spreads from these, or that patients affected with it, when removed to distant places, communicate it there to others; which we have never known to occur, and the same remark has been made by others. (Desruelles.)

The diagnostic symptom of hooping cough is a suffocating convulsive cough, returning in paroxysms, terminating in an excretion of thick, glairy mucus, and frequently accompanied with vomiting of the same kind of fluid. The cough is marked by a prolonged, stridulous, convulsive inspiration, attended with a rattling in the trachea, and succeeded by several short efforts at expiration, which follow each other in quick succession. The long convulsive hooping inspiration is again repeated, and the paroxysm continues, often, for many minutes, until the discharge of a portion of thick, slimy mucus, by expectoration or vomiting, occurs; when the respiration becomes again comparatively free. During the paroxysms of coughing, the child exhibits all the symptoms of impending suffocation, redness and swelling of the face, injection of the conjunctiva, shedding of tears, profuse perspiration about the head and forehead, and violent spasmodic action of all the respiratory muscles; the agitation of the whole body is such, that the child is obliged to lay hold of something to support him; in violent cases, a discharge of blood from the nostrils, and involuntary evacuations from the bladder and bowels are not

unfrequent.

Nearly all writers, since Rosen, have divided the hooping cough into different periods. In its development and progress, the disease unquestionably exhibits several stages, but these present so many important variations, in different cases, in their symptoms, and duration, that it is difficult to assign to each its proper limits or distinctive characters. (Billard.) By some, it is divided into the period of invasion,

the period of increase, and the period of decline. (Desruelles, Lombard.) By others, into the catarrhal stage, the nervous, spasmodic, or convulsive stage, and the stage of decrement, (Blacke,) and by others, into the inflammatory, the congestive, and nervous stage, and

the simple nervous stage. (Williams.)

The disease is very generally preceded by the symptoms of catarrh There is a dry cough, hoarseness, some sense of or mild bronchitis. constriction in the chest, and a feeling of weight, or dull pain of the head, redness and suffusion of the eyes, and some degree of febrile excitement with exacerbations towards evening. The duration of this stage varies considerably; it may be followed by the characteristic symptoms of hooping cough, in a day or two, or be prolonged for a week or two, or even longer; the cough, however, increases from day to day, and becomes gradually more convulsive and resonant. (Lombard.) In some cases, it has been entirely wanting, the peculiar symptoms of the disease occurring, as it were suddenly: (Cullen, Dewees, Desreulles, Lombard.) While during the prevalence of hooping cough as an epidemic, many children exhibit no other symp-

toms than those of the catarrhal stage. (Billard, Lombard.)

Sooner or later, however, the cough assumes its peculiar, convulsive, and suffocating character, and shrill hooping sound; it occurs in paroxysms, at irregular periods, during the day and night; the intervals being, in general, longer in the day, during the period of increase, and at night, during the decline of the disease. The cough is generally preceded by a mucous rhonchus, which is more evident, as the paroxysms become more frequent. The patient is, in general, aware of the approach of a paroxysm, by a sense of chilliness of the surface of the body, and a tickling in the throat, succeeded by a sense of constriction about the throat and chest, and a dread of suffication. which induces him to fly to his nurse, or to lay hold of any thing within his reach, for support, during the paroxysm. The duration and frequency of this is very various; in some instances, it continues scarcely a minute, while in others it is prolonged during five or six minutes, or even longer. The intervals between the paroxysms vary from half an hour to three or four hours; in very violent cases, at the height of the disease, the paroxysms are often divided by intervals of only a few minutes duration. They usually terminate by the discharge of a large quantity of viscid mucus, generally by vomiting, induced probably from the compression of the stomach by the forcible contraction of the abdominal muscles which occurs during the violent effort at inspiration. The disposition to vomit is apparently increased by habit; and consequently as the disease advances, the paroxysms of cough often terminate more frequently and speedily by vomiting or retching. (Williams, Lombard.) Immediately after the fit, the child appears entirely relieved, and a craving for food is often experienced; after this is satisfied, he is perfectly cheerful, and returns to his ordinary amusements. When, however, the paroxysms are frequent, of long duration, and marked by great violence, the patient recovers from his distress only by degrees, remaining exhausted for some time, with hurried or panting respiration, and complains, if old enough, of a tensive pain in the forehead, and pain or soreness of the chest. In some instances, the violence of the paroxysm is such as to produce a loss of consciousness from temporary asphyxia; or the asphyxia may be complete, and death ensue. In other cases, convulsions, or cerebral congestion and deep coma may occur.

The paroxysms often recur with some degree of periodicity; but they may be induced by too much, or improper food, excitement of the mind, or exposure to cold, or a confined and impure atmosphere. They may also be excited, by seeing another attacked by one. It is probable, that motion, amusement, and the open air, contribute to lessen the cough; while rest, the horizontal position, and the close air of sleeping apartments, increase the tendency to its return. (Lombard.)

In slight attacks, there may be but little or no fever, during the convulsive period of the disease, and but little functional disturbance, in the intervals of the paroxysms; but, usually, the presence of the sonorous and mucous rhonchus, particularly before and after the cough, and the mucus expectoration, in which the cough generally terminates, indicate, that in conjunction with the nervous affection, upon which the spasmodic, stridulous respiration, and sonorous cough depend, there still exists more or less bronchitic, or catarrhal disease: in fact, as the stage declines, the expectoration generally assumes the more consistent and opaque form which characterizes the concocted sputa of a terminating bronchitis. (Williams.)

The bowels are variously affected in hooping-cough. Though often perfectly regular, and the discharges natural, yet, occasionally, they are costive or sluggish, and in a few cases, diarrhæa, with vitiated discharges, a loaded tongue, nausea, loss of appetite, epigastric fullness and tenderness, and other symptoms of gastro-intestinal dis-

case, are met with.

In those cases of the disease, accompanied by severe bronchial inflammation, there is generally more or less cough between the paroxysms, and considerable febrile excitement; and the convulsive, hooping, cough, is generally preceded and followed by considerable uneasiness, or oppression and pain of the chest. The bronchial inflammation, in these cases, is apt to run into pneumonia, which is hence a frequent complication of the disease. When this occurs, we have the general symptoms of the latter affection, superadded to those of hooping-cough, as well as its distinctive physical signs. Lobular pneumonia, and pleuritic inflammation, are common occurrences in this disease. (Alderson, West, Williams.)

Hydrocephalus is one of the most serious complications of hooping-cough, and a very frequent one. It is marked by its usual symptoms—grinding of the teeth, rolling of the head, intolerance of light, contracted pupil; followed by squinting, vomiting, screaming, insensibility, &c. We have, in a few instances, seen a state of deep coma occur in the course of hooping-cough; the brain, after death, exhib-

21

iting extensive serous effusion, without any of the symptoms of men-

ingitis or hydrocephalus having presented themselves.

Anasarca is also one of the frequent complications of hooping-cough. In most of the more violent cases, there is a slight degree of ædema of the face and arms; but in some cases, serous effusion occurs throughout the cellular tissue, and in the cavities. (Richter, Lombard.) An attack of croup will often supervene during hooping-cough, particularly, in its early stage. Children of robust, plethoric habits, are

most subject to this complication.

The duration of the second stage is very various; it may continue for a very short time, or be prolonged for three or four weeks, or even longer; the symptoms then gradually diminish in intensity; the expectoration becomes more abundant, opaque, and thicker; the cough loses, by degrees, its convulsive character; the paroxysms are of less frequent occurrence, and of shorter duration; and, finally, by the end of two or three months from the commencement of the disease, it disappears, with the assemblage of other symytoms. The period when the symptoms begin gradually to decline, to their final termination, constitutes, what has been termed, the third stage of the disease.

It often happens, that after a very decided abatement of the symptoms has taken place, the cough again returns, with considerable violence; this relapse is, however, seldom of long duration; and, after two or three days, the regular decrease will continue its course.

(Lombard.)

The disease, in many cases, assumes a kind of chronic form, and may be protracted to a very long period, the paroxysms being well marked, but occurring at considerable intervals, and of little intensity or duration; or they may be induced, in those who have lately recovered from the disease, by the occurrence of a slight catarrhal affection. A curious case is related, in which the hooping-cough assumed a periodic form, a paroxysm occurring daily, at a certain hour, for several months, and returned at the same season for two years. (Percival.)

The occurrence of hooping-cough, in a severe and protracted form, in children of a lymphatic temperament, strongly predisposed to tubercular disease, or in whom the formation of tubercles in the lungs, has already commenced, very rarely fails to develope pulmonary consumption; the progress of which, is often very rapid, upon

the decline of the acute stage of the attack.

The physical signs of hooping-cough are those of mild bronchitis; variable sonorous, sibilant, and mucus rhonchi, in the upper and middle portions of the chest. During the height of the paroxysm, there is diminished sound of respiration within the chest. When complicated with pneumonia, the mucous and crepitant rhonci, with partial absence of the respiratory murmur, and dulness on percussion, will indicate the existence and extent of the pulmonary disease.

The appearances upon dissection, will vary with the violence of the

attack, the period at which death has taken place, and the simple or complicated character of the case. Nearly every writer, who has given the result of his autopsical examinations, mentions the existence of more or less of the indications of inflammation of the mucous membrane of the bronchii, and often, of the trachea; as, injection of the blood-vessels, thickening of the membrane, and the existence, upon its surface, of a layer of thick mucus, and occasionally, a muco-purulent fluid filling the ramifications of the bronchii. (Lettsom, Badham, Watt, Hastings, Marcus, Bauer, Shäfer, Wardrop, Ozanam, Baumes, Blache, Armstrong, Albers, Mackintosh, Alcock, Lombard.) Ulcerations about the glottis, and in the larynx and trachea, are noticed by some authorities. (Astruc, Mackintosh, Alcock.) When death is caused by asphyxia, in the early period of the attack, the mucous membrane of the respiratory tubes, is of a dark red or bluish appearance, the lungs are gorged with dark coloured blood, the whole substance of the brain is a little more livid than natural, and the bronchial tubes contain a little mucus, occasionally stained with blood. (Mackintosh, Gerhard.) A very common lesion in severe cases is dilatation of the bronchii. (Laennec, Dubreuil, Jadelot, Blache, Bertin, Bell, Alderson, Billard.) Inflammation of the lungs, especially lobular inflammation, is of common occurrence; and very frequently, inflammation of the pleura, with exudation or effusion. (Marcus, Coiter, Mackintosh, Alderson, Blache, West, Constant, Lombard.) To these lesions may be added, tumefaction and redness of the bronchial glands, and emphysema of the lungs. (Marcus, Wardrop, Mackintosh.) In a large number of cases, inflammation of the meninges of the brain, and effusion beneath the membranes, and into the ventricles, have been observed. (Coiter, Wardrop, Ozanam, Webster, Guibert, Mackintosh, Lombard.) A diseased condition of the phrenic and pneumo-gastric nerves, is noticed by some writers. (Clarus, Holzhausen, Hufeland, Breschet, Bauer, Kilian, Autenreith.) There is some doubt, however, as to the correctness of these observations; it is certain, at least, that a lesion of these nerves, is of very unfrequent occurrence.

Hooping-cough most generally occurs as an epidemic, but generally of very limited extent, its influence being confined, usually, to a single city or district, and often to a part, only, of these. Seldom, if ever, has it extended, either at once, or gradually, over large territories, as is the case with most epidemics. If, however, we are to receive, as correct, the accounts of the epidemics of 1510, 1557, 1580, 1757, 1767, and 1769, as given by De Thou, Sennertus, Sauvages, Riverius, Diversus, Conario, Geller, Arrand, we find these of wide extent, many of them prevailing throughout the greater part of

Europe.

The disease occurs at all seasons, and in all climates; but the spring and autumn, especially when cold and damp, and cold, variable climates, are admitted, by nearly all writers, as the most favourable to its prevalence; and it is in these seasons and climates, that the hooping-cough proves most fatal, from its being most usually complicated with severe bronchial, pneumonic, or laryngeo-tracheal

inflammation. The general production of the disease, by the joint influence of a cold and moist atmosphere, is insisted upon by a number of physicians. (Klinge, Richter, Marcus, Desreulles, Vondembush.) It has been found frequently to prevail most extensively, either immediately before, during, or subsequent to the occurrence of epidemic measles. (Richter, Desreulles, Vondembush.) Its prevalence at the same time with epidemic catarrh, has also been repeatedly observed. Children of all ages are liable to its attacks; infants at the breast, are, however, less liable to it, than those who are weaned: indeed, so generally does the disease attack, during the period of dentition, that many have supposed this to be its most common predisposing cause. Boys and girls are equally liable to it, though, perhaps, a greater number of the former will generally be found to escape an attack, than of the latter. Children labouring under chronic cutaneous eruptions, have been supposed to be rarely affected with the disease; or when attacked, to have it but lightly. (Hufeland, Lentin, Jahn, Autenreith.) The fact, however, is denied by others, (Hoffman, Haase,) and is not sustained by the general result of more recent observations.

In regard to the true pathology of hooping-cough, much diversity

of opinion has, and still exists.

A majority of the most authoritative writers, refer it to bronchial inflammation; which, by a few, is considered to be of a specific character. By some, however, who have written very ably upon the disease, the bronchial affection is viewed as a mere concomitant, or effect of the hooping-cough, and not, in any degree, essential to its existence. The most of these refer it, either to disease of the pneumogastric or phrenic nerve, or to disease of the brain, affecting the origin of the respiratory nerves. (Hufeland, Jahn, Löbel, Holzhausen, Leroy, Coiter, Bauer, Guibert, Albers, Breschet, Clarus, Webster;) whilst others consider the cerebral irritation to be secondary to the bronchial disease, and often absent. (Boisseau, Begin, Otto, Vondembush.) That the essential symptoms of hooping-cough are the result of a spasmodic closure of the glottis, there can be little doubt; but whether this is owing to an irritation, seated in the larynx and trachea, or in the brain, it is difficult to determine. In the greater number of cases, the disease commences as a simple, and often very mild, bronchitis; and it is not until after the bronchial irritation or inflammation has existed for some time, that the irritation is transmitted to the larvingeal nerves, and the convulsive cough, and difficulty of respiration occur. It has been attempted to be shown, that these latter symptoms are the result of an intermittent irritation and congestion of the brain, which precedes each paroxysm, ceases with the latter, but soon returns, giving rise to a renewal of the paroxysm, and hence, that the disease consists in a reciprocal irritation of the brain and of the respiratory apparatus; the latter, upon the one hand, acting upon the brain, through the medium of the eighth pair of nerves, the phrenic nerves, and those branches which are distributed to the muscles of the thorax; while on the other hand, the brain reacts upon these muscles, the glottis and diaphragm.

(Desruelles.) This much is very certain, that we can, in no other manner, account for the phenomena of the disease, excepting by referring them to irritation of the larvngeal nerves, as well as of the

respiratory mucous membrane. (Blache.)

When hooping-cough is unaccompanied with intense bronchitis, and is uncomplicated with pneumonia, tracheitis, or severe congestion, or inflammation of the brain, it is seldom attended with much danger; but in its more severe and complicated forms, it is with difficulty managed, and very frequently fatal. The younger the patient, also, as a general rule, the more danger attends it. Very frequently, when it occurs in infants at the breast, it is accompanied with cerebral congestion from its very onset, and is then particularly fatal. (Guersent.) We have also found, that when, in young children, it is accompanied with an excessive serous diarrhea, it is seldom recovered from; a similar remark is made by Richter. In many of the more extensive epidemics, the mortality from hooping-cough has been very considerable. Thus, in Sweden, during the sixteen years, from 1749 to 1764, 43,393 deaths occurred from the disease; and of these, 5,832 took place in the year 1755 alone. (Rosen.) In Glasgow, the deaths have been pretty nearly 5½ per cent. of the entire mortality; and in one year, (1809,) they amounted to $11\frac{1}{4}$ per cent. (Watt.) In Prussian Pomerania, the deaths were as 1 to 25½ of the entire mortality. In Neumark, 1 to 21½. In Brandenburg, 1 to 29½. In Sweden and Finland, 1 to 13\frac{1}{2}. In Strasburg, 1 to 94. It Boston, 1 to 82. In Charleston, 1 to 46.6. In Baltimore, 1 to 95.38. In New York, 1 to 64.7; and in Philadelphia, 1 to 63.1.

The treatment of hooping-cough will differ, according to the stage of the disease, the violence of the attack, its simple or compli-

cated character, and the age and vigour of the patient.

The remedies proper, in the first or catarrhal stage, are the same, precisely, as in simple bronchitis. It is chiefly upon the proper management of this stage, that will depend, in many cases, the safety of the patient; the diminished liability to the occurrence of severe bronchial or pneumonic inflammation, as well as the danger attendant upon violent cephalic congestion, induced, during the paroxysm of the disease, in the second stage. We believe, that in all cases, very great relief will be afforded, by the administration of an emetic, at the very commencement of the attack, and the continuance of the remedy, subsequently, in nauseating doses. In robust children, over two years of age, tartrate of antimony should be preferred; but in vounger children, in whom this article is seldom a very safe one, we would prefer the ipecacuanha. By many practitioners, the latter article is considered to be particularly adapted to the treatment of hooping-cough. They prescribe it in its first, and during the acute period of the second stage, occasionally, as an emetic, and subsequently, in small doses, the fourth of a grain every three or four hours, either alone, or in combination with sulphur, or with sulphur and belladonna. (Kopp, Astruc, Sims, Sagar, Hufeland, Kahleiss, Vondembush.) We have followed this practice, in a very large number of cases, with the happiest effects: we have usually combined the ipecacuanha with sulphur and extract of hyosciamus.²

^aR.—Pulv. ipecac. gr. iij. ad iv. Sulph. præcip. \(\foatss=\mathbb{I}\)j. Ext. hyosciami, gr. iv.—xij.—M. f. chart. No. xij. One to be repeated every three or four hours.

There are few cases, in which, at the onset of the disease, after an emetic, and the warm bath, the exhibition of a full dose of calomel, followed, in a few hours, by some mild purgative, as castor oil, rhubarb, and magnesia, or in children over two years of age, in whom the first stage is attended with considerable febrile excitement, by small doses of sulphate of magnesia, will not be found advantageous. The bowels being kept subsequently in a regular state, by occasional doses of some mild unirritating purgative, or by simple enemata. Perhaps the best purgative we can employ in the hooping-cough, particularly in the first or catarrhal stage, is calomel, an occasional small dose, say from two to five grains, given in the evening, and followed in the morning by a small quantity of castor oil, will generally have the effect of preserving a free, regular condition of the bowels, without unduly irritating them, or inducing severe purgation—an occurrence which should be always carefully avoided. Whatever opinion we may adopt of its mode of action, we are certain of the utility of calomel as a mild purgative in the first, and the acute period of the second stage of hooping-cough. (Dewees.) We are accustomed to combine with the evening dose of calomel, a third of a grain of ipeeacuanha, and the same quantity of the extract of hyosciamus, and have seldom found it necessary to give any purgative in the morning to insure its operation.

In every case in which, during the first stage, severe bronchial or pulmonic inflammation is present or threatened, particularly if the patient be of a plethoric or robust habit, bleeding becomes an indisdispensable remedy, and it should be resorted to, also, whenever the same indications present themselves at a later period of the disease, previous, at least, to the occurrence of extensive effusion in the bronchii. The extent of the bleeding should always be proportioned ot the violence of the symptoms, and the strength of the patient; upon our promptitude and decision in the use of this remedy will often depend the life of the patient. Leeches to the chest and about the clavicles, or cups between the shoulders, will be sufficient in young children; but in those who are older, and the symptoms severe, it will be better to have recourse to the lancet, followed, if necessary, by leeches. We are aware that blood-letting has been considered by some an improper remedy in the treatment of hoopingcough, and by others as of doubtful propriety; but independently of our own experience, we have in its favour that of Willis, Sydenham, Stoll, Sauvages, Astruc, Hillary, Huxham, Rosen, Hoffman, Matthäi, Home, Wendt, Willan, Lettsom, Forbes, Badham, Hufeland, Rush,

Underwood, Armstrong, Guibert, Webster, Dewees, Mackintosh, Billard, and many others. Mackintosh applied leeches over the larynx, and speaks confidently of the success of the practice.

Whenever there is a decided tendency to an affection of the brain, whether of a congestive or irritative character, blisters to the temples, or behind the ears, cold lotions to the scalp, and warm sinapised pediluvia, or sinapisms to the feet, should be immediately resorted to.

During the whole of the first, as well as during the acute period of the second stage, the patient should be confined to his chamber, which should be kept of a proper temperature, but well ventilated; nothing has a more deleterious tendency than sudden transitions of temperature, or exposure to cold and damp; almost invariably will these aggravate the paroxysms of cough, and endanger inflammation of the respiratory tubes or lungs. The diet should be perfectly mild and unirritating, and in violent cases should consist entirely of some simple mucilaginous drink. The occasional use of the warm bath should

not be neglected.

As soon as the acute character of the disease is reduced, some counter irritant, applied to the chest or between the shoulders, will be found highly beneficial; blisters are recommended by some, and if properly managed, produce, certainly, a very excellent effect; but some of the European practitioners prefer the production of a more powerful and permanent irritation, such as results from the ointment of the tartrate of antimony. (Autenreith, Luroth, Dewees, Corsin, Mackintosh.) Autenreith states that, in two severe epidemics, in which he employed frictions with tartar emetic ointment, he lost not a single patient. In order to insure the efficacy of this plan of treatment, we must not, we are told, be satisfied with merely producing pustules; the use of the ointment should be continued until small ulcerations occur in the intervals between the crusts. The treatment should be persisted in for eight or twelve days. If the eruption is very painful, the best application is fomentations, with a deeoction of hem-Luroth likewise employed the ointment in the same manner, in a very fatal epidemic of hooping cough, with the most gratifying results. Corsin also employed the emetic tartar, as an external irritant, during an epidemic of the disease, with decided benefit in every case. He prefers, however, its application in the form of a plaster, b which is to be worn upon the epigastrium, or between the shoulders, as long as the patient can endure it. Dr. Dewees thinks that he has observed more advantage to result from the use of the ointment of the tartrate of antimony, than from any other external application. He used it of the same strength as directed by Autenreith, with the addition of fifteen drops of oil of lavender, or essence of lemon, and applied it high up between the shoulders. Nearly the same remarks are made, in relation to the remedy, by Mackintosh. We know nothing of its effects, from our own experience; in the few cases in which we have employed it, we could never persist in its use, (and this is said to be essential to its efficacy,) (Autenreith, Luroth.)

in consequence of the severe pain, and deep ulceration produced. We have no doubt, however, that in severe cases, it may prove a very valuable derivative. We have generally resorted to blisters, and frictions with turpentine, the compound eamphorated liniment, or a liniment of the oil of amber and oil of rosemary, to the spine, and with the best results.

*R.—Tart. ant. 3jss.

Axung. 3j.—M.

A portion of the ointment of the size of
a nut, is to be rubbed on the cpigastrium, three times a day.

bR.—Empl. conii, 2 pts.

Empl. picis abietinæ, 1 pt.

Dyachylon, 1 pt.

Spread on leather, and sprinkle the surface with from 6 to 12 grs. of the tartar emetic.

•R.—Ol. oliv. Ziv.
— succini, Zij.
— rosmarin. Zij.—M.

In many cases, a plaster of Burgundy pitch, worn upon the chest, or between the shoulders, produces a very powerful rubefacient effect, and will, consequently, prove highly beneficial. At the meeting of the medical section of the British Association, in 1840, it was stated, that rubbing the chest with cold water, two or three times a day, with so much activity as to produce a rubefacient effect, has been found of very great efficacy, in cases of hooping-cough; and that this practice may be resorted to, even when the case is attended with bronchitis. (Hannay.) We have no doubt of the efficacy of the friction, but should certainly prefer olive oil to the cold water, which can have had no other good effect, than to prevent abrasion of the cuticle. An occasional emetic of ipecacuanha, will often give great relief at this period; and we have generally found the administration of small doses of ipecacuanha, extract of hyosciamus, and magnesia, repeated every three hours, of unquestionable efficacy.

When we have succeeded in removing, or so far abating the inflammatory symptoms, and the paroxyms are kept up chiefly by nervous irritation, and there exists no decided tendency to cerebral disease, we may then commence with the use of narcotics, antispasmodies and tonics. Nearly every article upon the lists, has been recommended by different writers, as almost a specific, in certain stages of the complaint, and as strongly reprobated, as either ineffectual, or positively injurious, by others. It is certainly true, that the treatment of hooping cough has been, in too many instances, marked by the grossest empiricism, without any reference whatever being made to the true pathology of the disease, or to its occasional complications with encephalic, thoracic and abdominal irritation or inflammation; and that not a few of the articles detailed in the books as certain remedies, are calculated, often, to do more harm than good,

while others are perfectly inert.

In regard to narcotics, strongly objected to by some, evidence of too conclusive a character has been presented, in favour of their employment, to leave any reasonable doubt as to their beneficial influence

after the acute stage has passed by, and the paroxysms of convulsive cough are kept up from nervous irritation alone. We are constantly in the habit of prescribing them, and would certainly find it very difficult to control the cough in the spasmodic stage of many of the more violent cases, without their aid. It is certain, that much may be effected in this stage, by a proper regulation of the diet, bowels, and clothing, and by a change of air; but while we admit, that by placing the child upon a bland, nutritious diet, keeping his bowels gently open by mild aperients, and protecting the surface by flannel, and by the occasional use of the warm bath, followed by frictions, together with free daily exposure to the open air, when the weather is perfectly mild and dry, we shall invariably moderate the violence of the paroxysms, and in mild attacks, find them gradually to cease; (Mackintosh;) yet there are few cases of hooping-cough, in which the continuance of the remaining symptoms of the disease will not be very materially shortened, and convalescence hastened and confirmed, by the judicious employment, in conjunction with the hygienic measures referred to, of narcotics, antispasmodics, and occasionally of tonics.

There exists among writers, some difference of opinion as to the narcotic best adapted to hooping-cough; opium has been recommended by many, either alone, or in combination with tonics and expectorants. (Stoll, Hufeland, Matthäi, Löbel, Baumes, Forbes, Henke, Dewees, Kirkland, Lombard.) We have employed an aqueous solution of opium, with some benefit; and Lombard, the syrup of white poppy, in the dose of a tea-spoonful, once, twice or three times a day. In some cases, he has found the syrup to remove the more troublesome symptoms, but without shortening the duration of the disease. It has proved particularly beneficial, in diminishing the number of paroxysms during the night, by inducing sleep, but even then, it has appeared to exert but little influence over those occurring during the day. This is precisely the result of our experience, in relation to the effects of the aqueous solution of opium. Morphia has been employed endermically, it is said with good effect, (Meyer,) a blister is applied over the præcordia, and when the cuticle is removed, the blistered surface is sprinkled every evening with half a grain of morphia,

rubbed up with dry starch.

*R.—Opii, pulv. 3j.

Aq. bullient. 3ij.

Let it stand for three hours, then strain, and add 3j. bi-carbonate of soda.

Dose, for a child two years old, a teaspoonful every three hours.

The narcotic from which the greatest amount of benefit is to be anticipated in this disease, is unquestionably the belladonna; it has been very extensively employed, and the evidence inits favour, is strong and conclusive. (Kahleiss, Janin, Hufeland, Widemann, Raisin, Guibert, Alibert, Shäfer, Laennec, Müller, Blache, Maunsell, Lombard.) It has been given in doses of from one half to one or two grains of the pow-

Cantra 1. 2 2 3

dered root, or from one-eighth to one-fourth of a grain of the extract, twice or thrice a day. Kahleiss gave the belladonna, in combination with Dover's powder and sulphur, and between each dose, a mixture containing hydrocyanic acid. We have given to the belladonna a very fair trial, and have, in many cases, been pleased with the prompt and decided relief produced by it, while in other instances, it has appeared to exert no influence whatever. A similar remark is made by Vondembush and Lombard. We have generally employed the extract, in the dose of from one-eighth to one-fourth of a grain, two or three times a day, sometimes oftener, combined with from one-fourth to one-third of a grain of ipecacuanha.

*R.—Rad. belladonnæ pulv. gr. v.
Pulv. ipecac. compos. gr. x.
Sulphur. præcip. 3 ss.
Sacchar, alb. 9ij.—M.
f. ch. No. xx.
One to be given every three hours to a child two years old.

*R.—Aquæ chamomil. Iss.
Syrupi simpl. Iji.
Acid. hydrocyanic. M xij.
Twelve drops to be given belween each
dosc of the belladonna.

Other narcotics have been recommended, as the camphor, (Burton, Underwood,) the conium maculatum, (Stork, Lentin, Butler, Danz, Odier, Schleisinger,) the hyosciamus, (Stoll, Hufeland, Danz, Löbel,) the stramonium, (Vondembush,) and the extract of nicotiana, (Stoll, Hufeland, Thilenius, Danz;) of the effects of these, with the exception of the hyosciamus, we have no experience. The hyosciamus we have repeatedly employed from a very early period in the attack, always in combination with ipecacuanha, and have invariably derived advantage from its use.

The hydrocyanic acid, has been strongly recommended, as a remedy in hooping-cough, (Muhrbeck, Kahleiss, Attlee, Volk, Heller, Granville, Lombard,) and by some, is considered to possess a "specific power" over the disease. (A. T. Thompson, Roe.) Professor Thompson regards it as the sheet anchor of the practitioner; he commences its use, immediately after the operation of an emetic and brisk purgative, and continues it, with no other alteration, than a gradual increase of the dose, until the disease is subdued. Dr. Roe is convinced, that in warm weather, it will cure almost any case of simple hooping-cough, in a short time; that in all seasons, it will abridge its duration, and that in almost every instance where it does not cure, it will, at least, materially relieve the severity of the cough. Dr. Atlee, of Lancaster, has, in a number of cases, effected a cure, in from four to fourteen days, by its use; b—he restricts it, however, to the second stage of the disease. Dr. Lombard gave from half a grain to a grain of the hydrocyanuret of potass, in the twenty four hours, in cases in which there was much irritation, and a great variety of nervous symptoms. Employed, comparatively, on a brother, whose sister was taking the sub-carbonate of iron, this last remedy, had a most undoubted advantage.

*R.—Acid. hydrocyanic. (Scheele's) 🌂 xii. Liquor. antimon. tartarisat. Ji. Tinct. opii. camphorat. Jijss. Misturæ camphoræ Jvijss.—M.

Misture camphore 3 vijss.—M.
Dose, a table spoonful every four hours, in some warm drink; the patient to remain in a warm room, and to live upon light pudding and broth. This prescription, Dr. Roe directed for a delicate boy, four years old. For a healthy looking female child, five years old, he directed—

R.—Aeid. hydrocyanie, (Scheele's) M xx. Liq. antimon. tartarisat— Vini. ipecacuanhæ, aa. Jjss.

Aquæ, Zxiij.—M.
Dose, a teaspoonful every two hours.

Acid. hydrocyanic. M.j.—M.

A tea spoonful morning and evening; and if no uncasiness, dizziness or sickness, is produced within forty eight hours, the dose to be repeated, three times a day. This prescription is for a child six months old; one drop more of the acid being added for each year of the child's age, beyond one year. He has never repeated the dose more than four times a day.

bR-Syrup. simpl. 3j.

In the few cases in which we have prescribed the hydrocyanic acid, the remedy, certainly, produced very favourable effects; but we never trusted to it alone, and hence, it is difficult to say, whether all, or how much of the benefit derived in these cases, can, with propriety, be attributed to the acid. It comes to us, however, too strongly recommended, not to demand a more extended trial, particularly in the more violent cases of the disease.

Of the antispasmodics that have been recommended in the treatment of hooping-cough, the assafætida, zinc and sesquioxyde of iron, appear to be those most deserving of trial. The assafætida has in its favour very strong testimony. (Millar, Kopp, Guibert, Chapman, Eberle.) We have employed it extensively, and have always been pleased with its effects; we have given it, by itself in solution, or in combination with the tincture of hyosciamus, or the watery solution of opium. Dr. Lombard states that he has often found frictions to the spine with the tincture of assafætida, of great service, and that a plaster applied on the chest, has aided the operation of internal remedies.

The oxyde of zinc will, in many cases, be found a useful remedy in arresting the spasmodic cough, in the second stage of the disease. (Guersent, Guibert, Lombard.) Dr. Lombard has employed the remedy extensively, in the dose of from four to twelve grains a day; he found it generally, to abate the violence of the paroxysms, and has seen complete cures effected by it alone. In two very young infants, whose cough was attended with symptoms resembling epilepsy, the oxyde of zinc stopped both the cough and the fits. Dr. L. has never seen any bad effects result from its use; our own experience is decidedly in its favour. But the remedy which appears to claim, above all others, our attention, is the precipitated sub-carbonate of iron, (sesquioxydium Ferri.) This was first recommended by Dr. Steymann, who directed two and a half grains every three hours, increasing one grain for each year of the child's age beyond the first. Dr. Lombard, however, gave it to the extent of from twenty-four to thirty-six grains, in water and syrup, or some cough mixture. "I think," Dr. L. remarks, "I may assert with confidence, that the subcarbonate of iron enjoys a remarkable property to lessen the violence

of the paroxysms, to diminish their frequency, and after a certain number of days, to cure entirely, the hooping-cough. It enjoys, besides, the advantage of strengthening the little patients, and thus gives them the force to resist a complaint, which sometimes lasts for weeks, and generally leaves them weak, low, and exhausted. In some patients, I have seen it cause, during the first day or two after it was commenced with, a temporary increase of the cough, but this always subsided after two or three days, and did not prevent the good effects of the remedy." "The beneficial effects resulting from the use of the sub-carbonate of iron, are easily explained, by its anti-periodic and anti-neuralgic properties, and it shows a posteriori, how much the hooping-cough resembles a true neuralgic, or at all events, a true nervous disease."

We have not yet had an opportunity of testing the powers of this remedy, and can, therefore, say nothing in regard to it, from our own

experience.

A great variety of other remedies have been proposed, for the cure of hooping-cough, as, the tincture of cantharides, either alone, or combined with the tincture of bark, with quassia or with cicuta, &c. (Lettsom, Sutcliff, Chalmer, Shäfer, Pearson, Beatty, Millar, Bucholtz,) musk, (Stoll, Hufeland, Gesner, Löbel, Dewces,) sulphuret of potass, ten grains mixed with honey, morning and evening, (Blaud,) liquor subacetatis plumbi, (Forbes,) garlic, internally and externally, (Hufeland, Dewees,) the arsenical solution, (Ferriar, Simmons, Eberle,) the lobelia inflata, (Eberle, Andrews,) and various fumigations, as of benzoin, tar, galbanum, nitrous acid vapour, &c., (Dohm, Watt, Eberle.) The lobelia inflata is spoken of by its recommenders, in terms of the highest commendation. Eberle states that he prescribed it for five or six years, in a very considerable number of cases, generally with some advantage, and in several instances, with the most decided success, it not only mitigating the violence of the cough, but abbreviating, in many cases, the course of the disease. He prescribed the saturated tincture, in union with the syrup of squill, in doses of ten drops each, four or five times daily, to a child two years old; and has raised the dose, in some cases, to twenty drops.

Of the various remedies last enumerated, we can give no opinion, never having employed them; the lobelia will probably, however, in

many cases, be found beneficial.

During the employment of whatever narcotic or antispasmodic remedy we may adopt, their effects should be carefully watched, and if any symptoms appear, threatening the occurrence of disease of the brain or lungs, or if the tongue becomes more and more red, the discharges from the bowels more and more frequent, thin and vitiated, and tenderness of the epigastrium is observed upon pressure, they should be at once omitted; and leeches or cups should be applied to the temples, nape of the neck, or epigastrium, according as either may be the seat of irritation, with warm, sinapised pediluvia, and the other remedies which the character and extent of the symptoms may indi-

cate. By watching thus the incursions of disease in those organs most liable to be affected in the course of the attack, and meeting it in its onset by an appropriate treatment, we shall save many patients, which by a little neglect, and keeping the attention too much fixed upon the paroxysms of spasmodic cough, would be most certainly lost.

Towards the close of the disease, the patient will often be much benefitted, and his convalescence confirmed, by the administration of some mild tonic; the bark, either in substance or infusion, or the sulphate of quinia, has been highly extolled at this particular juncture. (Brendel, Löbel, Raisin, Vondembusch, Dewees, Henke, Blache.) It is probable, however, that the use of the sesquioxyde of iron, as recommended by Steymann and Lombard, may render the use of other tonics unnecessary, and, judging from their accounts, it is unattended with some of the objections to which, in certain cases, the

cinchona is liable.

During convalescency, the utmost attention should be paid to the clothing, diet and exercise of the patient. Exposure to cold, indigestible food, or overfeeding, will be liable to produce a relapse. If the bowels are costive or sluggish, they should be kept regular, by gentle laxatives; if diarrhæa attend, Dover's powder, or some light astringent, will be proper, and if the discharges be thin or vitiated, small doses of calomel, combined with chalk, ipecacuanha, and extract of hyosciamus, the warm bath, and a regulated diet. cases, sponging the body daily with tepid salt water, has been found decidedly beneficial. The principal writers on the disease, agree as to the importance, towards its decline, of change of air. It is, in fact, often, particularly after severe and protracted cases, the only thing that will give to the patient a chance of recovery. (Gregory.) In many cases that had baffled all attempts to stop the cough, a change of air has accomplished the cure. It has been found equally indifferent, whether the patient be removed out of or into town, provided there is a change, and even a removal to a very short distance has been sufficient. (Lombard.) The change, if possible, should be, to the sea-coast, or to a high, dry situation in the country; this change, however, unless it be to a warmer climate, is improper so long as the weather continues cold or changeable, but in the latter part of spring, during the continuance of summer, and in this climate, until late in autumn, it will be productive of the best effects. Where a permanent removal cannot be effected, daily exercise in the open air should not be neglected, always taking care to guard against cold and dampness, by proper clothing, and all other suitable precautions.

10.—Foreign Bodies in the Larynx and Trachea.

Although it is not our intention to consider the proper surgical affections of children, yet as the accidental introduction of foreign substances into the larynx and trachea, often simulate very closely the symptoms of some of the more violent diseases of the respiratory

organs, it seems proper to notice, in this place, the signs upon which the diagnosis may be founded. When the child is known to have introduced into its mouth some small body, which has accidentally fallen into the trachea, giving rise immediately to severe dyspnæa, with stridulous inspiration, convulsive cough, and the other symptoms usually resulting from the existence of any impediment to the free ingress and egress of air into the lungs, of course the only question to decide, is the measures to be taken to relieve the respiration, and remove the impediment. If the foreign body be completely within the larynx or have passed into the trachea, the propriety and probable success of the operation of tracheotomy, should be fairly and cautiously considered; that the operation, when early resorted to, has repeatedly succeeded in affording complete relief, there is sufficient evidence upon record, and hence, no time should be lost previous to its performance, when it has been decided upon, for we have seen, in more than one case, so violent a bronchitis ensue at an early period after the occurrence of the accident, as to render the operation unavailing, even when the foreign body has been extracted. In some cases, however, the body had passed into one of the bronchii, and could not be extracted by any instrument introduced, through the opening, into the trachea, and was not dislodged, notwithstanding the violent fits of convulsive cough to which its presence gave rise; in one of these cases which fell under our notice, the child lived three months, and exhibited nearly all the symptoms of consumption of the lungs. Upon dissection, a small metal button was found firmly fixed, towards the middle of the right bronchus; both lungs were affected with lobular pneumonia, and the right with extensive vesicular pneumonia; this on being cut into, appeared to consist of an immense congeries of minute abscesses; in the left lung, there existed extensive interlobular and sub-pleural emphysema. The mucous membrane of the right bronchus, was thickened, and covered with a thick layer of dense, almost membranous mucus; traces of which were found, also, in the lower part of the trachea, and left bronchus; at the part where the button was lodged, the membrane was softened and ulcerated to a considerable extent; no part of the lungs presented any trace of tubercles. In the other case, after six weeks, during which the patient's symptoms were precisely those of chronic bronchitis, the foreign body, a large bead, was expelled, and the child gradually regained his health.

In many cases, however, the circumstance of a foreign body having passed into the larynx or trachea, may not be suspected, and then it is only by a close and careful scrutiny into all the circumstances—the symptoms under which the child labours, and the signs derived from auscultation and percussion—that we are able to detect the real nature of the accident. The symptoms produced by a foreign body in the larynx or trachea, are often those of laryngismus stridulous; in other cases, after a few days are passed, they are more nearly those of croup; while in numerous instances, the only symptom present, is a violent,

convulsive, ringing cough, coming on at irregular intervals, but without the stridulous respiration or severe dyspnæa of either croup or hooping-cough; the child, in the intervals, being apparently free from

every symptom of disease.

When a child, that has presented nothing to indicate the approach of any serious disease, is suddenly attacked with violent dyspnæa and convulsive cough, and symptoms of immediate suffocation—the dyspnæa being greater during expiration than inspiration—which symptoms, after continuing for a longer or shorter period, suddenly cease, and the child appears tolerably well, with the exception, probably, of a hoarseness of respiration:—but, after a time, the same phenomena return, with similar, or even greater violence, and thus continue to intermit and recur, irregularly, we may suspect the presence of some foreign body in the larynx or trachea. When in the former, however, the paroxysms of dyspnæa and convulsive cough, are of much greater violence, and of longer continuance, than when it has passed into the trachea, and the intermissions are shorter and less perfect. When the foreign body is in the trachea, or probably in one of the bronchii, we have known many hours, and even entire days to elapse, without the recurrence of a paroxysm. The stethoscopic signs, are chiefly valuable at the commencement, before inflammation of the bronchii has set in. When the foreign body is fixed in the larynx, as is likely if it be a fish bone or other pointed substance, the healthy respiratory murmur will be plainly distinguishable throughout the whole extent of the thorax, which will also return a clear sound upon percussion. Some mucuos râle (rhoncus,) may be audible in the upper portion of the trachea, owing to the accumulation of fluid, in consequence of irritation. When the foreign body is movable, as a button, plumbstone, &c. would be, its motion up and down the trachea will be occasionally heard, as well as a valve like sound, produced by its being driven in expiration against the rima glottidis. There may also be perceived, at times, a temporary interruption to respiration in one lung, when the body happens to be impacted in the corresponding bronchus; the respiratory murmur again returning, when the obstruction has been removed by a violent expiration. It is said that the foreign body is most likely to pass into the right bronchus, and that hence, it is in the right lung we shall most frequently observe the obstruction of respiration. (Maunsell.)

After some time has elapsed, however, should the foreign body not be expelled by a violent fit of coughing, bronchitis, or tracheo-bronchitis will ensue, and our only guide will then be the history of the case, as the stethoscopic signs will not assist us in our diagnosis. The most obscure cases are those in which a small smooth rounded body has passed into the trachea, and lodged in one of the bronchii; we have known a case of this kind, in which, after the first day, there was a complete intermission of the dyspnæa, spasmodic cough, and every other symptom, the child continuing for very nearly a week apparently free from all disease, except an occasional hoarseness of

respiration, and a short hacking cough, which recurred at short intervals; these symptoms gradually increased, and a violent attack of pneumonia, confined principally to the right lung, occurred, and terminated fatally in five days; when, upon dissection, a small glass ball, of the size of a large bead, was discovered, deep in the right bronchus, the presence of which had not been suspected during the lifetime of the patient, though, upon inquiry subsequent to the autopsy, it was ascertained that it had been given to the child to amuse him, on the day he was first attacked, and had been missed from that period.

SECTION III.

DISEASES OF THE NERVOUS SYSTEM.

1.—Hypertrophy of the Brain.

Enlargement of the brain, from a simple increase of organic particles, without any appreciable change of structure, is a very common occurrence in infancy. Its existence has been cursorily referred to by Portal, Otto, Hufeland, Scoutettin, Dance, Laennec, Jadelot, and Bouillaud; while its occasional presence, in patients that have died of epilepsy, and other chronic diseases, is noticed by a few of the earlier writers. It is chiefly, however, to the observations of Andral, Munchmeyer, Sims, Green, and Lees, that we are indebted for any accurate views in relation to its phenomena, diagnosis, and general pathology; upon each of which particulars, there still, nevertheless, exists much uncertainty. It can scarcely be doubted that the phenomena resulting from partial or general hypertrophy of the brain, are almost daily ascribed to causes, which have no existence at the time, while their actual source is entirely overlooked. Convulsions, epileptic attacks, idiocy, active inflammation of the brain, terminating in softening and apoplexy, are often induced by hypertrophy of the brain, in cases in which the latter has attracted little or no attention; while in other instances the patient is supposed to be labouring under chronic hydrocephalus, and when, as is not unfrequently the case, the hypertrophy terminates in serous effusion, the post-mortem appearances are adduced as conclusive evidence of the correctness of the diagnosis.

It is of some importance that an accurate diagnosis should be established in this affection, in order that we may be enabled to detect its existence at as early a period as possible, for if any thing is to be done

to arrest its progress, it must be before the brain has acquired any considerable augmentation in size. It is to be recollected, that cerebral hypertrophy is almost invariably developed slowly: that the peculiar phenomena produced by it, very generally present themselves so gradually, as to excite but little attention or alarm in its earlier stages, or if noticed, are seldom referred to their true cause, until they have acquired a character when they are no longer under the control of remedies.

Hypertrophy of the brain, or at least a condition of that organ strongly predisposing it to undue, and more or less rapid, augmentation in bulk, is very generally congenital. Children are often born with heads, the dimensions of which far exceed the normal standard, and greatly disproportioned to the residue of the body; in other instances, the head at birth presents nothing remarkable in its bulk or form, but soon after birth, rapidly increases in size, and often attains, within a short period, an enormous magnitude. In many of these cases, the cranium being developed in the same ratio with the brain, no morbid symptoms are produced, or but slight ones. (Andral, Scouttetin, Green, Lees.) So far as our own observations go, however, we have, in every case, observed more or less apathy, dullness and drowsiness, to accompany undue development of the brain, and this at a very early period. At a later period, and particularly when the growth of the cranium is slower than that of the brain, the symptoms that have been most generally observed, independently of the undue size of the head, and a peculiar projection of the parietal protuberances, (Andral, Scouttetin, Munchmeyer, Lees,) are, obtuseness of intellect, characterized chiefly by apathy to external objects,* a very great irritability of temper, inordinate appetite, giddiness, and habitual headache, with severe exacerbations. (Andral, Lees.) Another diagnostic sign occasionally present is, a sensation of firmness communicated to the finger, on pressure being made over the fontanelles. (Sims, Green.) In one case, in a child between five and six years of age, the skull was enlarged to such a degree, that the head became as large as that of an adult, and yet the cerebral functions were undisturbed, and the only phenomena which the child presented during life, were frequent falls, occasioned by the weight of the head, which was carried forward whenever the patient wished to run, and a great tendency to sleep, when he remained quiet. patient died of acute enteritis, and the brain exhibited a great development of all its parts, with only a small quantity of reddish serum in the ventricles.

It must be evident that children labouring under hypertrophy

^{*} The only case we have met with in which the intellectual faculties were increased in development and activity, is that of Dr. Elliotson; the patient, a lad of twelve years of age, "used," we are told, "always to seek the company of persons older than himself; and nothing pleased him more, than to converse of the best forms of human governments. Political economy was his delight." The patient died of apoplexy.

of the brain, are particularly predisposed to cerebral disease: hyperæmia of the brain, is readily produced by trifling causes, and from the degree of compression to which the brain is constantly subjected, whenever the hypertrophy is of any extent, much more serious consequences will result from a slight increase of blood in its vessels, than when the organ is in its normal condition. Apoplectic seizures have been noticed as preceding, accompanying, or resulting, from hypertrophy of the brain. (Sims.) We have repeatedly observed deep comatose seizures of some duration, or complete apoplexy, with extravasation of blood into the substance of the brain. Children with excessive enlargement of the head, we have found, also, to be particularly predisposed to convulsions, acute meningitis, and

hydrocephalus, from either direct or remote irritations.

When the capacity of the cranium does not increase with the increased development of the brain, or when the hypertrophy commences at a period when the ossification of the scull has been nearly completed, the phenomena produced are of a much more decided character, than when the growth of the cranium and brain go on simultaneously, or nearly so. We have in these cases, intense, habitual headache, augmented at irregular intervals; vertigo, or a sense of dizziness; increased dullness of intellect, amounting, in many cases, to complete idiocy; debility of the limbs, particularly of the inferior extremities, which goes on increasing, until, finally, general paralysis results; there is generally convulsive movements or twitchings of the muscles, at first slight, and occurring at long irregular intervals, but becoming gradually more severe and frequent, until regular convulsive paroxysms ensue, during one of which, death often takes place; or a state of coma may ensue, terminating sooner or later in death; the convulsions not unfrequently assume all the characteristics of epilepsy. In some cases, there suddenly ensues a considerable reduction, and, occasionally, entire abolition of sensibility. In other instances, the patient is suddenly attacked with acute delirium, or deep coma, more or less quickly followed by death. Mania has been observed in one case. (Andral.) There is, generally, an inordinate appetite; a torpid state of the bowels; and, occasionally, a marked slowness of the pulse. (Andral, Sims, Lees.) In the majority of cases that have fallen under our notice, the patients have been inclined to fat, and often every part of their bodies, were excessively loaded with it. Death, in the majority of cases, occurred suddenly, during a convulsive attack; it has, however, repeatedly been produced by genuine apoplexy, with effusion of blood in the substance of the brain; and in some cases, death is preceded by all the symptoms of acute hydrocephalus.

The disease is divided by Andral into two stages: 1st, The chronic, marked by few symptoms, or simply by slight obtuseness of intellect, more or less headache, either permanent or intermittent, vertigo, apathy, drowsiness, and convulsions at intervals; all of these symptoms may occur in the same individual, simultaneously or successively, or only

one or more of them may be observed. 2d, The acute stage, the phenomena of which are, sudden attacks of violent convulsions, idiocy, epileptic paroxysms, deep coma, or symptoms of acute hydroce-

phalus.

The duration of life in children affected with hypertrophy of the brain, is extremely variable; many arrive at puberty with but little suffering or inconvenience, while others die at an early age, from the accidental occurrence of hyperæmia of the brain, convulsions, cerebral inflammation, or from symptoms resembling acute hydrocephalus; in some instances, death occurs suddenly, without being preceded by any particular symptoms of disease; and occasionally death takes place, from diseases unattended throughout with any indication of cerebral affection. (Hufeland, Dance, Jadelot, Laennec, Scouttetin, M. Laennec, Sims, Andral, Lees.)

The prognosis, according to Dr. Lees, is not necessarily unfavourable, for, as the affection is rather an error of development, than an actual disease, there is a natural tendency to return to the normal state; the chief danger results from the very great susceptibility of the hypertrophied brain to disease, especially upon the occurrence of the affections incident to dentition, of pertussis, or either of the

febrile exanthemata.

The appearance of the brain upon dissection, is either that of simple enlargement, with flattening of the convolutions, diminished amount of blood in its vessels, little or no serum in the ventricles or beneath the membranes, and morbid paleness of the cortical substance; the substance of the organ being increased in density, and resembling boiled albumen, blanc-mange, or cream cheese. Sometimes the hypertropy is confined to one lobe, or to the corpora striata or thalami. (Sims.) Whether these partial hypertrophies are marked by any peculiarity of phenomena, we are unable to say. In all cases the hypertrophy is chiefly confined to the cerebrum, the cerebellum being seldom much, if at all affected. In some cases the brain, or rather the vessels of the pia mater, are injected with blood; in others, a slight amount of reddish serum is found at the base of the brain; in others, again, a clot of blood, with rupture of the fibres of the medullary portion, will be detected; whilst in a few, we have more or less extensive softening of the substance of the organ; but in all these cases, death will have been generally preceded by symptoms of cerebral disease, in addition to those which properly belong to hypertrophy of the brain.

The principal affection with which hypertrophy of the brain is apt to be confounded, is chronic hydrocephalus, to which its phenomena bear a stong resemblance, and with which it has unquestionably been repeatedly counfounded. This occurred in the cases referred to by Hufeland, Jadelot, Laennec, and Scoutteten. In the first case related by Dr. Sims, the mother of the child informed him, that they had wished to tap the head at one of the hospitals; and Dr. Hennis Green, saw a child who had been condemned to death by a

medical man, as having water on the brain, but which was a case of simple hypertrophy, that did not interfere with the health of the patient. It has been suggested that the peculiar projection of the parietal protuberances, on which Dr. Munchmeyer particularly insists, may prove a valuable guide in aiding us to discriminate cerebral hypertrophy from the latter affection. (Lees.) The sensation of firmness communicated to the finger on pressure being made over the fontanelles, in cases of hypertrophy, as contrasted with the fluctuating feel, in cases of chronic hydrocephalus, has also been proposed as a diagnostic sign; (Green;) but this, it is evident, cannot

apply, excepting in very young subjects, or in extreme cases.

Hypertrophy of the brain has been most frequently observed in children of a lymphatic temperament, or in those affected with rickets. It may be present at birth, or be developed at any period subsequently, up to puberty. Its most usual exciting causes have not been very clearly made out; there is no doubt, however, that it may be more or less quickly induced by any cause capable of exciting the brain itself, or that increase the nutrition of the body generally. (Sims.) Frequent contusions of the head, have been enumerated as an occasional exciting cause. (Dance.) The causes of colica pictonum, have been supposed to have a very great influence on the development of the disease. (M. Laennec.) M. Laennec, states, that he has never seen a case of fatal saturnine epilepsy, in which there did not exist an evident cerebral hypertrophy. Extensive disease of the heart and lungs, by impeding the return of blood from the brain, or obstructing its circulation, has been advanced as a probable cause of hypertrophy of the brain. (Sims.) But, we confess, we are at a loss to understand in what manner a state of venous congestion of any organ, is likely to increase its nutrition; it is much more reasonable to suppose this to be the result of the repeated occurrence of cerebral hyperæmia, from any cause attracting to the vessels of the brain an abnormal amount of blood. (Andral, Dance.) It must be recollected, however, that hypertrophy of the brain, does not invariably result, in cases in which hyperæmia has repeatedly occurred at short intervals, and that it is frequently met with, where no hyperæmia has been observed.

In the cases that have fallen under our notice, we have sought in vain for any cause for the excessive development of the brain, beyond

a congenital tendency to excessive nutrition of that organ.

In regard to the treatment, whether preventive, or that proper during the height of the disease, with the view of reducing the excessive size of the brain, we have very little to say. Our own experience affords us no positive results, and we find nothing satisfactory in the published observations of others.

When, in an infant, a tendency to excessive development of the brain is observed, it will be prudent carefully to avoid the slightest cause of increased excitement and determination to that organ; every precaution should be taken to prevent, as much as possible, frequent

or prolonged paroxysms of crying. The bowels should be kept freely open, and the body immersed daily in a tepid bath, followed immediately by brisk friction to the whole surface. Sponging the scalp frequently with cold water, appears to be a judicious means of keeping down any undue activity in the organic functions of the brain; while, at the same time, the head should be invariably kept uncovered within doors, and be but lightly clothed when the child is taken abroad; even a luxurious growth of hair should be kept down by frequent cutting. The appetite of these children is generally craving; it should, therefore, be kept under a cantious restraint; and, after the child is weaned, his diet should consist solely of a moderate quantity of farinaceous food, with milk. Daily exercise in the open air, to an extent proportioned to the age and strength of the child, should be insisted upon. When teething commences, the evolution of the teeth should be daily and cautiously watched, and the slightest indication of undue swelling, or inflammation of the gums, should be met by free scarifications, repeated whenever the swelling or inflammation of the gums recurs. When the child is more advanced in age, a serious question will arise as to its education. This should not be commenced too soon; to tax a brain in a state of hypertrophy, and predisposed, from the slightest cause, to hyperæmia and undue excitement, with even the slightest amount of mental labour, would certainly be a very dangerous experiment: hence when the hypertrophy is advancing with considerable rapidity, every degree of mental application should be positively prohibited; and those means employed, particularly bodily exercise, as will have a tendency to direct nutrition to the muscular system, and thus, if possible, to suspend its activity in the brain.

The slightest indication of undue excitement or hyperæmia of the cerebral vessels, should be a signal for the application of leeches to the head, cold lotions to the scalp, the exhibition of brisk purgatives, and the application of counter irritants to the extremities, as warm

sinapised pediluvia, or sinapisms, &c.

We believe that our chief efforts are to be directed to prevent the increase of the undue cerebral development:—after it has attained a certain height, we are unaware of any means capable of reducing it, without endangering the life or health of the patient. When the growth of the cranium ceases, while that of the brain continues, the morbid phenomena resulting from the compression of the brain, which invariably results, may certainly be, to a certain extent, abated, the comfort of the patient increased, and life prolonged, by a proper hygienic course of treatment—but all hopes of effecting a cure must be abandoned.

2.-Cerebral Hyperæmia and Hæmorrhage.

APOPLEXY -- PARALYSIS.

Apoplexy and paralysis are of much more frequent occurrence

during infancy and childhood than is generally supposed. We have met with them at every age, from one or two days subsequent to birth, up to the period of puberty.* A very considerable proportion of the deaths annually reported as from convulsions, disease of the brain, and acute hydrocephalus in children, we have reason to believe, are,

in fact, fatal cases of apoplexy.

The attack is generally sudden; but, in many cases, it may be preceded for some days by a deranged condition of the bowels; or it may occur after an attack of convulsions, or in the course of some other disease. The symptoms are, invariably, more or less complete stupor, with a tumid and livid appearance of the face, contraction and insensibility of the pupils, laborious or stertorous respiration, and, occasionally, convulsions, or a spastic rigidity of the neck and lower extremities. On recovering from the state of stupor, the child may exhibit no lesion of motion or sensation on either side of the body, or one side, or the upper or lower extremity of one or the other side, may be in a

state of complete or partial paralysis.

In very young infants, if proper remedies are promptly resorted to, the brain may, in general, be very promptly relieved of its state of hyperæmia, and the patients restored to a state of perfect health; but if the disease be allowed to continue too long, or recurs repeatedly at short intervals, should the child survive the immediate effects of the attack, serous effusion is very liable to occur in the brain, or some organic change in its structure, resulting ultimately in death, or in an impairment or destruction of the intellectual faculties, or in a permanent lesion of motion or sensibility, of some part of the body. In children somewhat more advanced in age, apoplectic and paralytic attacks are generally of a much more unmanageable and fatal character, often proving immediately fatal, in consequence of extravasation of blood at the base or upon the surface of the brain, and occasionally within its texture. (Kennedy, Legendre.)

The appearances upon dissection, in fatal cases, are usually—turgescence of the vessels and sinuses of the brain, with sanguineous oozing from the medullary substance of the organ, exhibited in a number of small bloody points upon the surface of incisions made in it, and occasionally serous effusion beneath the arachnoid, at the base of the scull, in the ventricles or in the theca of the spinal cord. The hyperæmia is occasionally found to affect the vessels and substance of the spinal marrow, equally with those of the brain. Even in cases of paralysis, occurring in children, whether they have been preceded or not by symptoms of apoplexy, hæmorrhage, of the brain from rupture of the vessels, disrupture of the texture of the organ, or even serous effusion, is met with much more rarely than in the adult. In the

^{*} During the 35 years preceding 1842, there occurred in Philadelphia, in children under ten years of age, 67 deaths from apoplexy; namely, in those under one year of age, 27 between 1 and 2, 16; between 2 and 5, 13; and between 5 and 10, 11.

generality of cases, the only appreciable lesion is extensive hyperæmia of the vessels of the brain and spinal column, and of the meninges and the roots of the spinal nerves. (Cazanvieilh, Kennedy.) If lesions of the texture of the brain occurred in these cases, as often as they do in the adult, we should more frequently meet with permanent paralysis in the infant, whereas it is very rare. (Kennedy.) We have, nevertheless, in children over two years of age, not unfrequently detected hæmorrhage within the substance of the brain after attacks of apo-

plexy, and, in many cases, persistent paralysis.

Effusion of blood either at the base of the brain, upon the surface of its hemispheres or into the ventricles, and along the whole course of the spinal cord, is occasionally observed in children. (Abercrombie, Serres, Legendre.) When the hyperæmia, and effusion of scrum or blood, is principally confined to the spine, constituting what has been denominated spinal apoplexy, the phenomena differ somewhat from those generally observed in connection with similar lesions of the brain. When there is simply turgescence of the vessels and texture of the medulla spinalis, the symptoms that have been observed are, occasionally, convulsions, drowsiness bordering on stupor, lividity of the face, drawing down of the corners of the mouth, and the fixation of the arms firmly against the sides. (Kennedy.) The symptoms from serous effusion, vary somewhat in different cases; thus, in one instance, we may have severe pain in the back, paralysis of the inferior extremities. (Chevelier.) In another, opisthotonos, difficult deglutition, and coma. (Ollivier.) In another, violent convulsions, coma, and distortion of the eyes. (Abercrombie.) In another, convulsions, followed by coma, with a permanent clenching of the hands. (Kennedy.) When blood is effused in the spinal canal, the symptoms are, pain in the back, and general convulsions (Chevelier,) or trismus, and convulsions, either tonic or clonic. (Abercrombie, Kennedy.)

Paralysis may occur in infants, independent of disease of the brain or spinal marrow, from local injury inflicted upon the nerves of the parts paralyzed. Examples of this we have in injury of the portio dura, as in face presentations, or where the head has been long pressed, in the pelvis, against the projecting ischiatic spines; (Kennedy;) the paralysis in these cases very generally subsides in a short

time.

Cerebral hæmorrhage, however, often presents itself, attended by symptoms very different from those of ordinary apoplexy, and which have been very generally ascribed to other lesions of the brain. For the investigation of the pathology of this form of disease, we are indebted almost exclusively to the labours of recent observers. It generally occurs in children between one and two years of age, and is seldom observed after the third year. The symptoms in the early stage are rather those of encephalic irritation, than of apoplexy; and in the later stage, of protracted cases, they differ but little from those of chronic hydrocephalus. The attack sometimes commences with

repeated convulsive paroxysms; at other times, with all the phenomena of cerebral inflammation; and in numerous instances, the disease has unquestionably been mistaken for acute hydrocephalus. (Legendre.) The child may be affected with vomiting, though in the majority of cases, this symptom is not observed. There is, very generally, in the commencement, severe febrile excitement, with flushed face, hot skin, and a frequent, full, and hard pulse, increased thirst, and loss of appetite. The pulse, at first, amounting to 100 or 106 in a minute, and soon increasing to 120 or 140, and in the advanced stages of the disease becoming so rapid as scarcely to be counted. Very early in the attack, the patient is affected with slight convulsive movements, particularly of the eye-balls, which are followed by some degree of strabismus. The bowels are, in general regular, and the stools natural in appearance. The child is often seen to carry his hands continually, but apparently unconsciously, to some part of the head. There soon occurs a permanent contraction of the feet and hands, followed by convulsions, either tonic or clonic; during which there is an abolition of sensibility and consciousness, and an increased turgescence and coloration of the face; sometimes the convulsions affect the whole of one side of the body, sometimes the upper limbs of one side only; not unfrequently, both sides are affected, but unequally; the convulsive movements being always greater in one than the other. After continuing for a few moments, the convulsions cease, and the patient remains in a state of drowsiness, which increases with the progress of the disease. The febrile symptoms continue throughout the attack, and augment in intensity as death approaches. The convulsive paroxysms occur first after irregular intervals of some length, but become gradually more frequent, until finally, towards the close of fatal cases, they are almost continual, or rather, the patient is affected with a constant tremor, with momentary convulsive paroxysms, during which, the injection of the face is increased, and the pulse and respiration accelerated. (Legendre.) In no instance has paralysis been observed during the acute stage. When death takes place, it is generally at the end of eight or twelve days. The occurrence of thoracic inflammation appears, in many cases, to be the cause of death in the acute stage. (Legendre.)

In many cases the disease runs a much more protracted course; the convulsive paroxysms abate in violence, or cease entirely; the febrile symptoms diminish in intensity and finally disappear; the cranium gradually increases in size, and often obtains a very considerable bulk; the sutures and anterior fontenelle remain unossified; the parietal projections acquire a very considerable prominence, as well as the forehead. In many cases the patient is affected with strabismus, and his countenance assumes a vacant expression; the pupils are usually dilated, the dilatation being equal in both eyes: vision is occasionally destroyed; (Berard;) but not generally. (Legendre.) In most cases the intellect of the patient diminishes as the head augments in bulk, and may finally be destroyed. It is, generally, however,

only weakened, and the patient becomes, to a certain extent, idiotic; (Legendre;) in these cases, he sometimes utters, particularly during the night, prolonged piercing screams, during which he extends his mouth widely open. (Legendre.) Cutaneous sensibility is not impaired, even in those instances in which a complete abolition of intelligence and movement takes place. The movements of the body are, however, seldom destroyed; the patients, sometimes, roll their heads constantly from one side to the other upon the pillow, or when seated, rock continually from side to side the upper part of their bodies. Occasionally they strike violently their head with the clenched fist, or dash it against the sides of the cradle; grinding the teeth is a common symptom, and one case is related, in which the patient, exhibiting the physiognomy of an idiot, tore off with his teeth, portions of his garments or bed-clothes, and swallowed them. (Legendre.) During the whole of this chronic state the patients, in general eat and drink with avidity whatever is presented to them. There is never any indication of partial paralysis, nor any diarrhea; the bowels are usually constipated. In a number of the cases that have been observed, death was always the result of some accidental disease, unconnected with the affection of the brain. (Legendre.)

The chronic stage of the disease is generally protracted from eight to thirty months, and would probably continue much longer, if no accidental cause were to occur to accelerate the death of the

patient.

Cerebral hæmorrhage is not necessarily fatal. In the acute stage the symptoms produced by it may be entirely removed, and the patient be restored to health without danger of his becoming subsequently hydrocephalic. In those cases in which the hæmorrhage is to a slight extent, the blood, very probably, may be entirely removed by absorption; but when a large amount of blood is effused, an organized cyst is formed around it, and the disease acquires a chronic form. Even when this is the case, however, as soon as the disease has arrived at its height, it has a natural tendency to decline, and may disappear entirely:—the serous fluid and clots in the brain being absorbed, and the cyst containing them gradually obliterated, the cranium may contract in size, and the fontanelles and sutures become completely ossified. (Legendre.) 'The movements and sensation of the body may be fully regained in these cases, but it is probable that there will always remain a certain degree of fatuity or idiocy.

The appearances upon dissection, when death takes place in the acute stage, are either a simple effusion of bloody serum, or more frequently, a bloody serum, containing small, thin, reddish clots of blood, the whole inclosed in a kind of sac, formed by a soft, thin membrane, attached to the lower surface of the arachnoid. The effusion is invariably found within the arachnoid cavity; in the sub-arachnoid cellular membrane, and in the ventricles there generally exists a small quantity of perfectly limpid, or light citrine coloured serum. The effusion most commonly occurs upon the surface of both the hem-

ispheres. (Legendre.) It is sometimes, however, confined to one, and rarely occurs upon the cerebellum. (Legendre, Boudet.) The clots are usually very thin, from two inches and a quarter to two inches and a half in extent, soft, and of a bright colour when recent, but becoming brownish or greenish, and more firm the longer the period that has elapsed since the effusion took place. They may exist on a level with the anterior and middle fossæ of the base of the brain; but more generally occur upon the upper surface of the hemispheres. (Legendre.) The clots are invariably covered with a reddish, elastic, soft, delicate membrane, but of some degree of firmness, and about one tenth of an inch in thickness; it may be detached from the surface of the arachnoid in small shreds. This membrane always becomes more elastic and firm the longer the effusion has existed. Most writers refer its production to a mechanical separation of the fibrinous portion of the effused blood, which, deposited on the under surface of the arachnoid, becomes gradually organized;—the first vestiges of organization presenting themselves about the fifth day after the effusion has occurred. (Baillarger.)

The veins of the surface of the hemispheres are occasionally gorged with blood, and the cortical substance of the brain of a very bright reddish grey; the incised surface of the brain becomes studded with numerous bloody points. The convolutions are not sensibly flattened, nor the brain in a state of hypertrophy: (Legendre:) it has been supposed to be in some cases, even reduced in size, (Berard,) which is, probably, however, a mistake. (Legendre.) Not the slightest trace has been discovered in any case, of grey, semi-transparent granulations on the pia mater throughout its extent, nor the least appearance of

tubercle, in any part of the brain. (Legendre.)

When death occurs at a later period, the clots are found enclosed in a true organized cyst, this adheres intimately to the lower surface of the arachnoid, by means of a very fine, delicate cellular tissue, that is very easily torn, and permits the cyst to be detached entire. The cyst has no attachment to the surface of the brain, excepting by vessels which pass over it to the latter. (Buillarger, Legendre.) The contents of the cyst are coagula of blood and a bloody serum, but more generally the last only, which is then always in considerable quantity. (Berard, Poumeau, Legendre.) The blood is sometimes in the form of soft, red coagula; at others, the cyst contains a brownish, turbid, red serum, in the midst of which float filaments of a soft, somewhat elastic, grevish-red substance, having a close resemblance to fibrine. The parieties of the cyst are thin and transparent; over their surface pass numerous small branches of vessels to the brain. Its cavity is at first single, (Poumeau,) but subsequently it becomes, by the approximation of its sides, at different points, divided into a number of small cells; there is generally one triangular cavity of an inch or two in length, extending along the falciform process of the dura mater. (Legendre.)

The etiology of the form of cerebral hæmorrhage just described, is but little understood; age appears to be its chief predisposing cause; it has seldom been seen in infants under one year of age, and still less in those over three years. (Legendre.) In the great majority of cases the hæmorrhage is the result of a simple exhalation from the vessels, produced by repeated recurrences of hyperæmia of the brain. It is seldom the result of rupture of a blood vessel; when the effusion of blood is produced by the latter, death takes place almost immediately, the blood is unmixed with serosity, and there is no trace of an organized membrane around it. (Serres, Boudet, Legendre.)

In the cases that have been observed by Legendre, the greater number occurred in the winter, whereas those that have occurred under our notice occurred in summer, and at least one third of them could be traced to the effects of insolation. The disease has appeared to us to be in all cases a true irritation of the brain, the hyperæmia resulting from this irritation, terminating in an effusion, more or less considerable, of blood and serum, upon the surface of the brain, in place of giving rise to meningeal or cerebral inflammation. We agree, therefore, with the suggestion that has been offered, namely, that the febrile excitement and slight convulsive movements by which the commencement of the attack is accompanied, mark the period of simple hyperæmia, while the occurrence of carpo-pedal contractions, but more especially of violent and repeated convulsive paroxysms, followed by more or less drowsiness, indicate the period when the sanguineous exhaltion in the cavity of the arachnoid has taken place. (Legendre.)

Cerebral hæmorrhage is to be distinguished from tuberculous disease of the brain by the early age at which it occurs. The latter being seldom developed previous to the sixth year, or at least not until a period beyond that at which the form of cerebral hæmorrhage with which it can alone be confounded, occurs. (Guersent, Legendre.) Tuberculous meningitis is, also, seldom accompanied by the intense febrile reaction observed in cerebral hæmorrhage; repeated bilious vomiting, and obstinate constipation, are likewise, common in the first, but very rare in the latter; while the convulsive attacks, are neither so constant nor so frequent. The permanent carpo-pedal contraction is absent in the tubercular affection, and constantly present, to a greater or less extent, in the hæmorrhage of the arachnoidal

cavity.

In its chronic form, this form of cerebral hæmorrhage is with difficulty distinguished from chronic hydrocephalus of the ventricles of the brain, the symptoms of the two being nearly the same. The latter affection, however, is often congenital, and commences, in all cases, soon after birth, without any appreciable cause; the head augments in size gradually, and acquires, often, an enormous bulk; on the other hand, the arachnoidal hydrocephalus, resulting from cerebral hæmorrhage, is never congenital, but commences, ordinarily, about the tenth month, or the period of dentition; the head

increases in size gradually, but never acquires so great a volume as in chronic hydrocephalus; the disease is, finally, preceded invariably by repeated convulsions, or symptoms of encephalic disease, which

mark the period of the occurrence of the hæmorrhage.

It may be distinguished from hypertrophy of the brain by the augmentation of the size of the scull preceding, in the latter, the development of morbid symptoms; whereas, it is only in the chronic stage of cerebral hemorrhage that the head increases in size. It is proper, however, to remark, that children affected with hypertrophy of the brain are strongly predisposed to cerebral hyperæmia, as well as to meningeal hemorrhage.

The prognosis in cases of meningeal hæmorrhage must be based upon the source of the sanguineous effusion, the period at which it occurs, the nature of the phenomena by which it is accompanied, and

the circumstances under which the patient is placed.

The source of the hæmorrhage is all important in forming our prognosis; if from a ruptured vessel, it is always promptly fatal. There is great difficulty in distinguishing this form of hæmorrhage from that which is produced by simple exhalation, excepting by its rapid termination in death. The age, however, of the patient, may afford us some aid; in young children, hæmorrhage of the brain,

from a ruptured vessel, being very rare. (Legendre.)

When the case is recent, the prognosis is the most favourable for by a judicious plan of treatment, it is then possible that we may cause the absorption of the effused fluid, and prevent, thus, the occurrence of the chronic form of the disease. When, however, the symptoms of the acute stage are of considerable intensity, the febrile reaction violent, and the convulsive paroxysms occur at short intervals, the hopes of a favourable termination are but slender; and should the patient be attacked with pulmonary inflammation, a fatal termination is almost inevitable. (Legendre.)

In its chronic stage, meningeal hæmorrhage is always a serious disease; for even under the most favourable circumstances, it may produce serious lesions of motion, and more certainly of the intellect. When both these functions are completely abolished, the prognosis is still more unfavourable; there being little probability that either will be again recovered, or the probability is, before any amendment can

occur, that death will ensue from some other affection.

Under all circumstances, there is greater hopes to be entertained of a final recovery, when the patient is placed under favourable hygienic conditions, than under opposite circumstances. In the public hospitals of Europe, the disease is almost invariably fatal. (Baude-

locque, Legendre.)

In relation to the treatment of cerebral hyperæmia and hæmorrhage, notwithstanding the results of clinical experience furnish us with but little information, there can be little difficulty in deciding upon the plan best adapted to control the disease, at least in its earlier stages. In the form of apoplexy from simple over-distension of the blood vessels of the brain, which is that most commonly

met with in young infants, leeches to the head will almost invariably be demanded. The safety of the patient requires that the overloaded state of the brain should promptly be reduced, whether it occur as the original affection, or is a consequence of some pre-existing disease; and in young children leeching appears to be one of the safest, easiest, and most effectual means of effecting this. A leech or two will be borne by a new born infant, and the happiest effects will often result from their application, in cases of hyperæmia, or undue irritation of the brain. (Kennedy.) The extent of local depletion must, however, be left to the judgment of the practitioner; it is to be governed, in a great measure, by the age and strength of the patient, and the urgency of the symptoms; and while everything depends upon the depletion being sufficient to relieve the oppression of the brain, the utmost caution should be observed not to carry it too far, as this may produce a very serious degree of debility, and actually augment, rather than reduce, the condition of the brain it is intended to remedy. Should, however, the loss of blood produce a pallor of the countenance, quick pulse, and a state approaching to complete syncope, the administration of some stimulant, as wine whey, should be immediately resorted to, in order to prevent the serious and even fatal consequences, that might otherwise result.

If the patient is able to swallow, we should administer, immediately, a brisk purgative, of which the best will probably be calomel, followed by castor oil, and repeated, subsequently, in frequent small doses, combined with a minute portion of ipecacuanha. When the purgative cannot be administered by the mouth, we must resort to purgative enemata; one composed of tepid water, salt, and molasses with the addition of castor oil will usually be sufficient; but where the symptoms are urgent, an addition of turpentine to the enema will be proper; (Kennedy;) or it may be composed entirely of castor oil and turpentine. In all cases of extensive hyperæmia of the brain, a pretty smart impression made upon the lower portion of the intestines, will invariably be found to be attended with the most decided

good effects.

Immersion of the lower half of the body in warm water, while cold lotions are applied to the scalp, when judiciously managed, will often promptly rouse the patient from his state of stupor, and may subsequently be employed, if any tendency is observed to a recurrence of the hyperæmia. Stimulating embrocations to the lower extremities, and along the spine, (Kennedy,) we have employed in many cases with very decided advantage. Blisters behind the ears, although of little use during the apoplectic attack, have appeared to us to be often useful in preventing its return.

In that form of meningeal hamorrhage, in which the blood is effused in the cavity of the arachnoid, during the acute stage, the same treatment will be demanded; the immediate safety of the patient, and the prevention of the chronic state of the disease will depend upon our being able to remove the cerebral hyperamia, before hamorrhage has occurred, and subsequently to obtain the absorption of the effused blood and serum,

before it becomes enveloped by an organized membrane. Leeching, or when the patient is old enough, bleeding from the arm, to an extent proportioned to the age and strength of the child, and the violence of the symptoms present, followed by active purges, warm sinapised pediluvia, and cold applications to the head, will be the remedies, upon which we are chiefly to depend, during the early period of the acute stage. After the bowels are smartly opened by purgatives, (full doses of calomel followed by an infusion of senna, with the addition of sulphate of magnesia,*) benefit may be derived from the administration of small doses of calomel, tatarized antimony and nitre,* every three hours. Blisters to the nape of the neck, or between the shoulders, will occasionally be found useful, after the febrile symptoms have been somewhat reduced.

*R.—F. l. sennæ, 3ss.

Mannæ, 3ij.

Sem. fænelie. 3ss.

Sulph. magnes. 3iv.—M.

Infuse in half a pint of boiling water, of which a child of two years may take a small wine glass full.

bR.—Calomel. gr. vj. ad xij.
Antimon. tartarisat. gr. j.
Pulv. nitri, gr. xxxvj. ad xlviij.—M.
f. chart. No. xij.

In nearly all the acute affections of the brain in children, cold lotions to the scalp are, subsequent to direct depletion, one of the most powerful remedies we can employ; simply sponging the scalp with cold water will answer as well, perhaps, as any other lotion, or we may add to the water a portion of vinegar, alcohol, or camphorated spirits; it is, however, upon their abstraction of heat alone,

that the good effects of these lotions depend.

In regard to the extent to which the depletion is to be carried, the amount of purgation to which the patient is to be subjected, and the nature of the other antiphlogistic, counter-irritant, and derivative remedies to be employed, and the proper period and intervals for their administration, much must be left to the judgment of the practitioner; no general rules can be given, as important modifications will be demanded by the character of individual cases. But, there will be but little difficulty in deciding correctly, in relation to the proper indications, and the remedies, by which these are to be fulfilled, if the pathology of the disease be kept constantly in mind. It is to reduce the irritation and consequent hyperæmia of the brain, and to prevent its termination in effusion, that our remedial measures are to be directed in the first period of the acute stage; the activity of these measures being commensurate with the intensity of the symptoms, in each case.

The diet of the patient should be of the mildest and least irritating character; during the height of the disease, it will be proper to proscribe every article of food, and confine the child entirely to some

simple mucilaginous drink, given cold.

Whether, in any instance, meningeal hamorrhage, or rather the irritation of the brain by which it is induced, is the effect of difficult dentition, we are unable to say; but, as the attacks most frequently occur at the period of the eruption of the teeth, it is important to pay

attention, in every case, to the condition of the gums, and if they are

found swollen or inflamed, to relieve this by free incisions.

After the occurrence of hæmorrhage within the arachnoid membrane, the treatment must be governed by the nature and extent of the symptoms present. If depletion has been carried to a sufficient extent in the early period of the attack, leeching or bleeding from the arm will seldom be necessary; but should the acute symptoms still continue, with any degree of violence, the application of a few leeches to the head, or of cups to the nape of the neck, will be prudent. Under all circumstances, the bowels should be kept freely open; and probably the best means for doing this, will be by the use of the calomel, tartarized antimony, and nitre, at stated intervals; this combination, at the same time that it keeps up a sufficient action upon the bowels, tends to diminish undue arterial excitement. The cold lotions to the head will, also, be proper, and the repetition of warm pediluvia and blisters behind the ears, will generally be productive of good effects. The diet should still be mild and unirritating; the only food allowed in addition to the mucilaginous drinks already recommended, being plain water gruel, or milk and water.

Throughout the whole of the acute stage, the patient should be kept as quiet as possible; and guarded, as much as may be, against every thing capable of irritating or exciting him. The temperature of his apartment, and the quality and quantity of his clothing, should be such as will keep his body of a comfortable warmth, and protect him against the effects of sudden transitions of temperature; but, at the same time, the air he breathes should be preserved perfectly pure, by free but cautious ventilation; we are to recollect the danger invariably attendant upon the occurrence of any new disease, in the course of this affection, and the liability of the patients to lobular pneu-

monia from slight causes.

When the disease has attained its chronic stage, we have to contend against a condition of the brain, very much resembling chronic hydrocephalus, but from which, judging from the few facts in our possession, there is a much greater probability of recovery, there being a natural tendency to absorption of the effused fluids, and an obliteration of the sac, in which they are contained. The treatment will consist in guarding against a recurrence of cerebral irritation, and promoting the absorption of the abnormal fluids from the arachnoid cavity. The first is to be accomplished, chiefly by judicious hygienic measures, exposure of the patient to a pure, fresh atmosphere, —a mild unirritating diet—a proper temperature of the body, preserving the bowels regularly open by mild purgatives, and the daily use of the warm or tepid bath, according as the existing temperature of the patient's surface is depressed, or otherwise. How far we may be able to promote the absorption of the effused fluid, by the employment of diuretics combined with calomel; iodine, internally and externally, and the judicious use of tonics, we must wait for the results of a more extended experience to determine.

The prophylaxis is all-important; children peculiarly predisposed to irritation and hyperæmia of the brain, should be placed under the same hygienic treatment, as directed in the section on cerebral hypertrophy.

3. - Convulsions.

From birth up to the termination of the stage of infancy, convulsions are of very frequent occurrence; they may take place, in the course of almost every disease which attacks at this period of life, and are, in fact, the common precursors of death, in all of them. They are often, however, the sole phenomena produced by certain irritations of the brain, arising originally in that organ, or transmitted to it from some other part, more especially from the alimentary canal. Their frequency and the danger by which they are very generally attended,

demand for them a separate consideration.*

The parts most generally affected with convulsive movements, are the eyes, the muscles of the face, those of the superior and inferior extremities, and those of respiration. Each part of the body may be separately or successively affected with convulsions, or the whole of the voluntary muscles may be simultaneously affected. Most generally, however, the convulsive movements are confined to a single limb, or to one side of the body, or if they occur on both sides, they are always more violent on one side than the other. The convulsions are very generally attended with foaming at the mouth, often with a peculiar, hissing respiration, with flushing of the face, injection and protrusion of the eyes, a copious perspiration about the head, forehead, and temples, and occasionally with a livid appearance of the contour of the eyes and mouth. The pulse is generally contracted, and extremely rapid. In violent paroxysms, the tongue is often wounded by its being protruded between the teeth; discharges of blood from the nose are not uncommon, and occasionally extensive ecchymoses of the adnata of the eyes. The jugular veins are generally distended during the fit, as well as the veins about the head and forehead. The violence of the paroxysms is very various; in some cases, the muscles are affected with a trembling vibratory motion, rather than with convulsive contractions and extensions, while in other cases the muscles are in the most rapid and constant state of contraction and relaxation;—the contractions of the limbs are occasionally so forcible as to render it impossible to restrain them.

The duration of the paroxysms is very various. They may cease after a few minutes, or continue for hours, or even days. In all cases, however, the paroxysm is marked by partial remissions of the convul-

^{*} The number of deaths from convulsions, in children under ten years of age, that occurred in Philadelphia, during the thirty-five years preceding 1842, was 7297, or an average of 208.5 per annum—namely, in infants under one year of age, 5325; between 1 and 2, 994; 2 and 5, 726; 5 and 10, 252.

sive movements, which either abate in violence for a short time, or cease altogether for a moment or two, and are then repeated with

equal or increased violence.

When the paroxysm goes off, the cessation, in slight attacks, or those of short duration, may occur suddenly; but in the more severe attacks, and those which have lasted for any length of time, the convulsive movements become gradually less violent and frequent; the eyes less salient, and assume a more natural expression; the countenance acquires its usual look; and the patient appears altogether unconscious of what has occurred. He merely evinces more or less lassitude, and, if able to speak, complains, perhaps, of headache. long, refreshing sleep frequently succeeds. In many cases, however, there remains for some time after the paroxysm has ceased, a tonic contraction, or a loss of power, in some of the voluntary muscles, or the child may be affected with complete paralysis of one limb, or an entire side of the body. A curious case is related of entire loss of speech and hearing, consequent upon a sudden attack of convulsions, in a child, eighteen months old. The patient regained her vivacity and general health, but continued deaf and dumb until she reached her sixteenth year, when, after the noise of a public rejoicing, she was observed to recover her sense of hearing, and she soon after began to articulate. (Thompson.) When attacks of convulsions are frequently repeated, they may assume finally the character of genuine epilepsy. (North.)

Children frequently die during the convulsive paroxysm; when this takes place, it is, in the majority of cases, the result of extensive hyperæmia of the brain, or from asphyxia caused by excessive engorgement of the vessels of the lungs. In some cases, a state of syncope supervenes upon convulsions, similating death; (Brachet;) in one instance, a child, in this state, after being laid out for interment, was recovered by friction diligently applied to its surface near the fire. (Johnson.) The paroxysm of convulsions has sometimes ccased, upon the occurrence of a hæmorrhage from the nose; (Planque, North;) this we have observed repeatedly. Their termination by a copious diarrhœa is very common. Vomiting, also, very frequently causes the cessation of convulsions, by removing from the stomach the offending matter, by the irritation resulting from which they have been produced. We should keep this important fact constantly in mind, in deciding upon the treatment of the convulsive paroxysm. We have repeatedly seen the most violent attacks of convulsions, in which bleeding, sinapisms, injections, and the warm bath, have been resorted to without effect, cease immediately when, by the operation of an emetic, a quantity of undigested matter has been discharged from the stomach.

It is scarcely possible to determine, from any of the symptoms which occur during the convulsive paroxysm, either its probable duration or ultimate result. The most violent paroxysms frequently cease, within a short period, without any immediate injury to

the health of the child; or the subsequent occurrence of any disease, traceable to them. (Bright.) In other instances, the attack, apparently slight in its commencement, either destroys the child, in a few hours, or is the precursor of some serious affection of the brain, by which death is produced, or the mental and physical powers of the patient are considerably and permanently impaired. The onset of many of the most serious diseases of childhood is, indeed, marked by convulsions. In general, however, when the convulsive paroxysms are slight, short in duration, and are succeeded by a state of cheerfulness and general health, ultimate danger is seldem to be apprehended; but when they are marked by great violence in their onset, or gradually increase in violence; when they are long continued, or recur frequently at short intervals, there is great danger of a fatal termination. When the child is dull, heavy, listless, and peevish after the cessation of the paroxysm, we have cause to apprehend a speedy repetition of the attack. Immediate danger to life, during the convulsive attack, is much less to be feared, when the paroxysms are separated by long intervals, than when they recur after short and imperfect intermissions; there is reason, however, to apprehend, in these cases, a permanent irritation of the brain, from which, at some future period, serious mischief may result. Convulsions produced by remote irritations, are, in general, much more manageable and less fatal than those dependent upon direct irritation,

or upon disease of the brain or spinal marrow.

The appearances presented by the bodies of those who have died from convulsions, are very various. Of course, those cases in which the convulsive attack occurs, in the course of some disease of the brain, the pathological appearances are of no value, in determining the immediate cause of the convulsive symptoms; it is only those cases where the convulsions present themselves as the principal phenomena, that the autopsical lesions are of any value. It is said, that, in many cases, the brain and nervous system present no traces of disease whatever; this statement we are not permitted to deny; we can only say, that, in every instance in which we have examined the brain, after death from convulsions, more or less disease of that organ, or of the medulla oblongata or spinalis, was present. In most cases, this amounted to simple, but very extensive, hyperemia, with slight effusion of serum beneath the membranes, or within the ventricles; in other cases, partial softening of the brain was very evident; tubercles were frequently detected, either meningeal or within the substance of the brain, and, in a few cases, effusion of blood upon the surface of the brain, at its basis or within the theca of the spinal marrow. Inflammation of the membranes of the brain, sharp spiculæ of bony matter formed in the dura mater, abscesses in the brain, or effusion of blood into its substance from external violence, are the appearances recorded by some of the older writers. (Morgagni.) Effusion of serum, vascular turgescence, tumors attached to the membranes, or imbedded within the substance of the brain, are noticed by more recent writers. (Bright.) Turgescence of the vessels, a deep red colour of

the dura and pia mater, and effusion of blood beneath the cranium, are noticed by another observer, (De Claubry;) vascular turgescence, at the origin of the nerves distributed to the muscles that had been affected with convulsive movements, has also been noticed. (Moulson.) Effusion of serum, or of a gelatinous matter, engorgement of the blood vessels, extravasation of blood, abscesses, tumors, and inflammation of the meninges of the brain, are the lesions described by others. (Portal.) Effusion of blood within the spinal canal, engorgement of the vessels of the brain, and extreme venous congestion of the entire substance of the brain, with serous effusion, were met with in one case, and the same appearances with extreme mollescence of the brain, in another. (Horner.) Turgescence of the vessels of the brain, its substance of a pink colour, and serous effusion into the ventricles, at the base of the cranium, and within the theca of the spine, are noticed by a recent observer. (Kennedy.) Schmidt, who appears to have collated, with a good deal of care, the observations of the German pathologists on the subject of convulsions, gives as the general result of their autopsies, extensive congestion of the brain and spinal marrow; serous effusion in the ventricles, upon the surface, and at the base of the brain, or within the vertebral canal; in a few cases, effusion of a gelatinous matter upon the surface of the brain, and within the spinal theca; in still fewer cases, effusion of blood upon the hemispheres of the brain, or within the spinal canal: indications of meningeal inflammation, circumscribed softening of the brain, and abscesses, were observed, in a very few instances.

It unquestionably results from the most accurate and extensive series of pathological observations, that, in the great majority of instances, convulsions are intimately connected with disease of the brain or medulla spinalis; we can, however, easily conceive that, in consequence of an intense irritation, occurring either primarily in the brain, or affecting it secondarily from disease of the alimentary canal or other organs, a severe attack of convulsions may occur, and produce almost immediately the death of the patient, without any appreciable

lesion of the brain being discoverable, after death.

Convulsions may occur, at any period, from the moment of birth up to puberty. The first few weeks of the infant's life, the period of weaning, and that of dentition, constitute the stages of infancy, at which convulsions are most liable to occur; from accidental causes, however, they may be produced subsequent to the latter period, but the tendency to their occurrence gradually decreases, from the second period up to puberty; thus we find that the greatest number of deaths from convulsions occur within the first year—the next greatest, between one and two years; the next, between two and five; and the smallest number, between five and ten; after this, the falling off in the amount is so considerable, that the number is not worth noticing. The frequent occurrence of convulsions in infancy, is unquestionably owing to the greater susceptibility of every part of the system, at this age, than subsequently, the greater activity of all the organic functions;

the large size of the brain compared with the rest of the body, and the very great development and activity of its capillary system engaged in the perfection of its growth and organization. Irritations are quickly transmitted from the other organs to the brain, and the habitual hyperæmia of this organ, during infancy, is readily increased by slight causes, and though we may not understand why irritation and hyperæmia of the brain should, more readily in infancy than in after life, stimulate the muscles to irregular and inordinate action, there can be little doubt as to the fact; few of the cerebral affections of this age are unattended, either in their commencement or progress, with convulsions; and we have seen, that in those who die of disease, the only observable phenomena of which are convulsive paroxysms, the brain almost invariably presents indications of the existence of irritation, an overloaded state of its blood-vessels and an injection, often very considerable, of its substance; these lesions frequently extending, also, to the medulla oblongata and spinalis. There can be no doubt, that, from various causes, the very great susceptibility to impressions, in the nervous system of the infant, is, in many cases, still further augmented, and that, with this augmentation of nervous susceptibility, the predisposition to convulsive attacks will likewise be increased. That this is, in fact, the case, daily experience teaches us. Thus, some children are known to be far more excited than others, by sensations communicated to them through the external senses, and are thrown into a state of tremor, almost amounting to convulsion, by unusual objects, sounds, and odours, which, upon others, produce little or no effect; such children are liable to be suddenly affrighted or alarmed, to be peevish, fretful, and discontented, and, with difficulty, amused; their sleep is disturbed by dreams or frequent startings; their faces flush, and turn pale suddenly, from causes of the most trifling character, and their whole deportment, the mobility of their facial expression, and their shrinking, quick, timid glance, in the presence of strangers or of unfamiliar objects, indicate the morbid excitability of their nervous system. Such children are said, also, to present an unusual development of brain, and a precocity of intelligence. (Levret, Mauriceau, Baumes, Schmidt, Blundell, Andral, Dubois d'Amiens.) The fact, that children, born with large heads, or whose heads increase in size disproportionately to the rest of their bodies, are particularly liable to convulsions and other cerebral affection, the result of our own observations confirms; we have not, however, observed that such children present, in general, an earlier development of intellect than others. A hereditary predisposition to convulsions has been noticed by many respectable authorities; (Boerhaave, Lorry, Marley;) this is not improbable, though we have seen no facts in confirmation of it. It is a common occurrence, however, to find a predisposition to convulsions, to exist in all the children of the same family; (Blundell, Andral, Schmidt;) this is no doubt, the result of similarity of organization, in all probability, transmitted to them by their parents. It has been said, in fact, that the children of parents, who marry, at too early or too advanced an

age, are more liable to convulsions, than the offspring of those who marry in the prime of life; (North;) and it is unquestionably true, that children, born of females in whom the health of the constitution has been impaired by luxurious habits, late hours, deficient exercise, stimulating, and otherwise improper diet, or intemperance of any kind, are more predisposed to convulsive affections than the offspring of mothers, who are in good health, and live regular, active, and temperate lives. And this is probably one of the reasons why convulsions are of far more frequent occurrence, in large and crowded cities, than in the open country. We are to recollect, however, that the stagnant and impure air of cities acts equally prejudicially upon the infantile organism as upon that of the adult, and may develope in it subsequent to birth, a predisposition to convulsive affections, while the fresh and pure air of the open country, by invigorating the vital powers of the infant, and diminishing nervous excitability, renders it less susceptible to the impression of the ordinary, exciting causes of convulsions. (Eberle.) In older children, a neglect of exercise, confinement within doors, too early and long continued mental application, or the excitement produced by night parties, and crowded rooms, will develope the undue nervous excitability which predisposes to convulsions. Although no climate or latitude appears to afford protection against an attack of convulsions, they are unquestionably of much more frequent occurrence in warm and very variable climates, and unhealthy localities, generally.

Those forms of convulsive disease in children, depending upon atmosphere or climate, such as prevail in the West Indies, or in erowded hospitals, ill ventilated suburban districts, or the narrow streets, courts, and alleys of large cities, often exhibit peculiar phenomena, marking them, in a certain sense, as specific diseases; like all affections that owe their existence, in a great measure, to atmospheric causes, they assume, often, peculiar types and characteristics, and prove, generally, more fatal in their tendencies. (Kennedy.) Under this head may be classed, the epidemic convulsions, which occurred at Paris, (Claubry,) the epilepsy, that occurred at Copenhagen, and destroyed, in thirteen years, nearly thirteen thousand children, (Lange,) the trismus nascentium, of the West Indies, and the infantile convulsions, which, previous to the year 1792, destroyed every sixth child born in the Dublin Lying-in Hospital. (Clarke.) That convulsions may occur, both as an endemic and epidemic, there can be no doubt.

The exciting causes of convulsions are very numerous. In new-born infants, they occasionally result from the excessive and long-continued pressure, to which the head has been subjected, during a protracted and difficult labour; and more particularly, when ergot has been injudiciously administered, to accelerate the birth of the child. In children born in a state of partial or complete asphyxia, respiration is often but imperfectly established, and death is very liable to result from an attack of general convulsions. Convulsions may also be produced, in young infants, by exposure to cold, or to a vivid or powerful light, or by the effects of a confined and impure atmosphere.

In infants who are liable to violent attacks of spasmodic colic, convulsions are of frequent occurrence. (Baumes, Chambon, North, Parrish. Graves.) The most common causes, however, of those derangements of health in infants, which either immediately or eventually lead to attacks of convulsions are errors in diet, with respect both to its quantity and quality. From the moment of birth up to the termination of childhood, convulsions are liable to be produced by this cause. The animal, remarks a recent writer, (Graves,) which, but a short time before, was nourished by the placenta, is immediately after birth, supported by ingesta; and hence, from this sudden change, if there be any source of irritation existing in the system of the child, or in the nature of its food, an unhealthy state of the bowels rapidly ensues, and gives rise to convulsive movements. To these, nurses have given the name of nine-day convulsions. Again, when another change is made, and the nurse's milk is left off, children are also liable to convulsive fits, and these are the convulsions of ablactation. In fact, at any period during the first year, infants are predisposed to convulsions, from various causes, that act primarily, by inducing an irritation of the digestive organs;—as when it is allowed improper food, in addition to the breast milk—or when this is rendered unwholesome, by the improper food or drink of the mother or nurse, by her becoming strongly affected by passion or any mental emotion, by over-exertion or exposure to the sun, or by her health, from any cause, becoming impaired. (Boerhaave, Baumes, Gilibert, Chambon, North.)

Subsequent to weaning, improper, or too much food, may be ranked,

also, among the most common exciting causes of convulsions.

Difficult dentition, is unquestionably a frequent cause of convulsive attacks. A child has been known to suffer from the time it first begins to cut its teeth, repeated paroxysms of convulsions, in consequence of which, its life has been despaired of from day to day, and from week to week; yet, after the lapse of several months, to recover completely, upon the appearance of the first molar teeth. (Bright.) Intestinal worms are very generally accused, as a frequent cause of convulsions; but we suspect this is but rarely the case; no well marked instance of the kind has ever fallen under our notice; others make nearly a similar statement. (Lieutaud, Brachet, North.) imprudent or long-continued administration of opium and its preparations, to infants and young children, is to be ranked, rather as a predisposing, than exciting cause of convulsions. It is unquestionable, that a very small dose of opium given to an infant, will often be promptly followed by a convulsive paroxysm, and that its continued use, will produce a state of debility, and increased irritability, that strongly favours the occurrence of convulsions, from slight causes. The sudden suppression of chronic diseases of the skin, or the drying up of the discharge from long-continued ulcerations behind the ears, has been known, in numerous instances, to give rise to an attack of convulsive disease.

We have already noticed, among the causes of convulsions, an

impure and confined atmosphere;—we have known them likewise, in repeated instances, to be produced by insolation. Convulsions in children are often produced by moral causes; as, intense fear, or horror, or sudden surprise; violent anger; and long-continued fits of crying. (North, Armstrong, B'undell, Eberle, Legendre.) Although we believe, that in the majority of eases, convulsions are dependent upon irritation, with hyperæmia of the brain or spinal marrow, or upon inflammation, acute or chronic, of its membranes or substance, we admit, that in some instances, they may result from excessive Thus, excessive depleevacuations, or from deficient nourishment. tion, by bleeding or active purgation, extensive hæmorrhage, and long-continued or profuse serous diarrhea, not unfrequently give rise to convulsive paroxysms, of great violence. But even in these cases, it is probable, that the convulsions are preceded by very considerable turgescence of the vessels of the brain.

Although, in numerous instances, convulsions occur suddenly, in children apparently in perfect health, they are frequently preceded by certain symptoms, which have been supposed to indicate that state of increased excitability of the nervous system, which predisposes to convulsive attacks, (North,) and are, in our opinion, the phenomena resulting from a certain degree of irritation of the brain, most com-

monly connected with gastro-intestinal disease.

These symptoms are, sudden starting, from trifling, or no appreciable cause; uneasy sleep, disturbed by sudden cries; a state of drowsiness during the day, and restlessness at night; a fretful, peevish disposition; disinclination to play or be amused; frequent fixation of the eyes, without their being, apparently, directed to any particular object, or, they are thrown upwards, and steadily fixed upon the ceiling; rapid and frequent contraction and dilatation of the pupils; when a candle is held to the eyes, during the contraction of the pupils, they will suddenly dilate, and, again, as suddenly contract, the light being steadily continued close to the eye. (North.) The effect of the light upon both eyes, is not always similar; one may remain fully dilated, while the other contracts; or, one may remain stationary, the other being alternately contracted and dilated. (North.) When the child is asleep, the limbs are frequently rigidly extended, the great toe and thumb being turned inwards. There is a rapid alternation of paleness and flushing of the cheeks; at one moment the countenance expresses great animation, at the next, the utmost lan-The breathing is irregular; long, deep, apparently difficult inspirations are alternated with quick, short, catching expirations. This is usually accompanied by fullness of the upper lip, and a contracted appearance of the alæ nasi. The hands are frequently directed towards the nose, apparently involuntarily; the fingers are either in frequent and sudden motion, or are firmly pressed towards the palm of the hand; more frequently, the thumb is contracted upon the palm, and the fingers extended, and separated from each other. When the child is put to the breast, it will suck eagerly for a moment, and then cease suddenly, and throw its head backwards, with an expression of anxiety in its countenance; or perhaps it will roll its head from side to side. Deglutition appears to be performed with difficulty, when these symptoms occur. (North.) Hiecup is not unfrequent, as well as a slight convulsive movement of the muscles of the face, particularly during sleep, which gives to the countenance an appearance of smiling. (Blundell.)

It is not pretended that all of these phenomena are invariably present in the same child, or that they are necessarily the premonitors of a convulsive attack;—when, however, several of them present themselves, there is a reasonable cause to apprehend the occurrence of convulsions, and for adopting the requisite preventive measures.

The treatment of convulsions must vary, according to the circumstances of each case. During the convulsive paroxysm, it has been supposed, by some, that little or nothing can be done towards arresting it. (North, Eberle.) This, however, is an error, and if generally acted upon, would prove, in many instances, a very serious one. Frequently, the only time we have to act, is during a paroxysm, which, unless we are enabled to arrest it, or moderate its violence, will often terminate only, with the life of the patient. That the violence of the convulsive attack may be reduced, and that, frequently, its duration may be shortened, by a prompt and judicious treatment, we are

well convinced, from the result of our own experience.

When the convulsions are very violent, and occur in a robust, plethoric child, with evident symptoms of an overloaded state of the vessels of the brain, our first and most important remedy, is direct depletion. We may either open a vein in the arm, if the child is old enough, or, we may apply leeches to the temples or behind the ears, in numbers adapted to the age of the patient, and the character and extent of the symptoms present. In numerous instances, we have seen the best effects result, when convulsions have occurred about the period of dentition, or subsequently, from cups to the nape of the neck, or between the shoulders. In those cases attended with heat of the head, an injected countenance, throbbing of the carotids, a projecting, sparkling eye, during the paroxysms, and a state of deep drowsiness during the remissions, it is all-important that a speedy and prompt impression be made upon the vessels of the brain; here, provided blood cannot be drawn in sufficient quantity from the arm, it is probable, that division of the temporal arteries, opening the jugular vein, or cups to the temples or behind the ears, should be preferred to leeches. It is impossible, in these violent cases, to lay down any general rule, as to the exact quantity of blood to be drawn;—this must be left entirely to the judgment of the practitioner. We have seen, in some cases, the loss of a very small amount of blood, produce an almost immediate resolution of the convulsive paroxysm; while in others, this has not been effected, until the bleeding was earried as far as the strength of the patient rendered prudent. Even in hose cases, however, in which the symptoms of cerebral hyperæmia

are less strongly marked, if the patient be strong and robust, bleeding to a moderate extent, will be proper, as a precantionary measure; for, though the nervous centres may at first suffer only from simple irritation, yet, by the continuance or frequent repetition of the paroxysms, the brain is very liable to become the seat of disease.

Next in importance to bleeding, in the majority of cases, are active purgatives; these do good, as well by determining the undue amount of blood from the brain, as by the removal of any cause of irritation that may exist in the bowels. When the child can swallow, a full dose of calomel should, therefore, be early administered, and followed in a short time by castor oil, magnesia and rhubarb, or an infusion of senna. When purgatives cannot be administered by the mouth, purgative enemata are to be resorted to. The common domestic enema of salt and molasses, with the addition of sweet oil, will generally answer; or if a more active one is required, a mixture of castor oil and spirits of turpentine, will probably be the best we can employ. In all cases of convulsions, dependent upon derangement of the alimentary canal, spirits of turpentine will be found a very useful remedy, and when the patient can swallow, given by the mouth, nothing will act more promptly as a purgative, while it would appear also to produce a decidedly beneficial impression upon the diseased gastrointestinal mucous membrane. (Copeland.)

*R.—Spirit. terebenth. 3j.
Olei ricini, 3iv.
Mucil. gum acaciæ, 3iv.
Aq. fænil. 3j.—M.
A teaspoonful may be given to an infant three or four months old,
and double that quantity to a child a year old.

In those cases in which active depletion is called for, sponging the whole of the scalp frequently, with cold water, is a measure from which much benefit will result. In violent cases, pounded ice inclosed in a bladder may be applied. The cold applications to the head should be continued, until the cheeks become pale, and the scalp cool, and they should be renewed, if the flushing of the cheeks, and the heat of the head return. During the application of cold to the head, the rest of the body should be kept carefully warm. Even in those cases in which bleeding may not be thought advisable, sponging the head with cold water, will be found to be almost invariably productive of good effects; and, during the intervals of the paroxysms, as well as in those children strongly predisposed to their occurrence, it forms one of our best means of diminishing the irritation of the brain, and, in this manner, preventing their accession. pised pediluvia, or immersing the lower part of the body in a warm bath, subsequent to active depletion, in those cases in which this is indicated, or, at an early period of the attack, in cases in which bleeding is not considered advisable, will always be highly beneficial; during the use of the pediluvium, or while the patient is in the bath, cold water, or even ice, may be applied to the head with the best

effects. Cold water dashed or poured upon the head, will, in some of the more violent convulsive attacks, produce a more prompt and

powerful effect than its simple application.

Upon the same principle that we employ the pediluvia and hip bath, to determine the blood from the brain, and counteract its state of irritation, sinapisms may be applied to the extremities, and some rubefacient linement to the spine. We prefer, with the generality of German practitioners, the application of sinapisms upon the extremities, to blisters. They will be found, in many cases, to act as powerful auxiliaries to the other remedies. In some of the more chronic cases, we have seen good effects result from blisters behind the ears, or between the shoulders; and, at an earlier period, when the convulsions appeared to be unconnected with any considerable engorgement of the vessels of the brain, a large blister, applied over the epigastrium, has appeared to us to have a very powerful influence in cutting short the paroxysms—we have never applied blisters to the scalp.

In every case, as early as possible after the occurrence of the convulsions, an examination should be made of the state of the gums, and if they are swollen or inflamed, even though there exists no indicacations that any of the teeth are upon the point of protruding, they should be freely scarified; and the scarification should be repeated daily, so long as the swelling or inflammation remains unabated. When the gum appears firmly distended by an approaching tooth, its free incission at this point, will frequently prevent a threatened, and

almost instantly relieve a present, paroxysm.

In attacks of convulsions evidently dependent upon irritating matters or undigested food in the stomach, or where we have strong reason for suspecting this to be the case, an emetic will always be proper, and will often quickly suspend the paroxysms. In infants and young children we should always prefer as an emetic the ipecacuanha, but if the infant is robust, or in older children, the tartarized antimony may be employed. In such cases, following the emetic by a full dose of calomel, and after it has operated, administering some gentle narcotic, as the aqueous solution of opium, or a dose of the extract of hyosciamus with magnesia, will, in general, very promptly affect a cure.

*R.—Extract hyosciami, gr. j.—ij.

Magnes. calcinatæ, gr. iv.—M.

For an infant of two or three months; the dose to be increased in older children.

When convulsions are the result of excessive evacuations, either of blood, or of serum, as in the copious diarrheas with which infants are frequently affected, the head of the patient should be considerably elevated, and kept constantly wet with cold water, and small doses of some gentle stimulant, combined with a narcotic, as the carbonate of ammonia, or wine whey, with extract or tincture of hyosciamus, should be given, carefully graduated in quantity and frequency of repetition, according to the age of the child. The utmost tranquillity of mind and

body should be enforced, and the chamber kept darkened. Where much debility remains after the convulsions cease, some gentle tonic, as the sulphate of quinia, the protocarbonate of iron, or the oxyde of zinc, combined with small doses of hyosciamus will be proper, with a mild nutritive diet. Where the bowels are much affected, and the serous discharges are very copious, injections of a solution of acetate of lead, with the addition of the tincture of opium should be resorted to, and repeated at proper intervals, until the inordinate discharges from the bowels are suspended.

Artificial respiration was resorted to in a case of long continued convulsions in an infant five days old, with the most happy result. (Cape.)

In every case of convulsions occurring in children, during the intermissions of the paroxysms, as well as upon their cessation, it is important that the patient be kept perfectly quiet, and free from every species of excitement; a convulsive attack being invariably succeeded by a degree of morbid irritability of the nervous system, which will

endanger a return of the paroxysms from the slightest cause.

After the paroxysm of convulsions has been suspended, the subsequent treatment will depend entirely upon the character of the symptoms which remain. If any indications of disease of the alimentary canal be present, this should be treated by its appropriate remedies, which it is not necessary to recapitulate here. If decided symptoms of a continued irritation of the brain exist, we should persist in the use of the cold applications to the head, of the warm hip bath, and should consider the propriety of blisters to the temples, behind the ears, or to the nape of the neck; the bowels should be kept regularly open, and the healthy state of the secretions poured into them promoted by the administration of small doses of calomel, at regular intervals; combining the calomel in these cases with a portion of ipecacuanha, extract of hyosciamus, and calcined magnesia, will very generally be found to increase its efficacy.

^aR.—Calomel, gr. vj. ad xij.
Ipecae. pulv. gr. iij.
Ext. hyosciami, gr. iij.—iv.
Magnes. calc. gr. xxxvj.—M. f. ch. No. xij.
One to be given every two, three or four hours, according to the age of the patient.

The diet of the patient should invariably be light, unstimulating, easy of digestion, and given only in moderate quantities. Animal food, in every form, should be prohibited, so long as there remains the slightest danger of a recurrence of irritation or hyperæmia of the brain. It is unquestionably true, that many cases of convulsions occurring in young infants, are dependent upon indigestion, in which milk, even that of the maternal breast, but more generally of the cow, seems particularly to disagree with the patient, the curd remaining in the stomach undigested, and producing irritation of the alimentary canal, and secondarily of the brain; in such cases, milk must be entirely prohibited, and the child may be allowed in its stead, rennet whey, with stale bread or cracker, chicken or barley water, plain

veal or mutton broth, or thin panado; and this diet should be continued until the digestive organs have regained their healthy action.

(Graves.)

It frequently happens, that for some time after the convulsive paroxysms have been suspended, there will remain a very great degree of nervous excitability. The child remains peevish, fretful and listless, the cheeks are occasionally flushed for a moment and then of a deadly pallor; the pulse is small and rapid; the countenance is ordinarily pale and distressed, and the forehead wrinkled. The carotids often throb violently for a moment or two, and then their action becomes slow and languid; and upon close examination, slight momentary twitchings of different muscles will be detected. This condition of the patient calls for the employment of sedatives and light tonics. The Dover's powder in small doses, the extract of cieuta or hyosciamus, in conjunction with alkalies or the oxyde of zinc, and the infusion of calomba or gentian, or the sulphate of quinia, have been recommended. (Brachet, North, Brereton, Schmidt, Blundell.) There is, unquestionably, many eases in which the use of opiates, particularly in the form of the compound powder of ipecacuanha, or Dover's powder, will have a very beneficial effect, in quelling the nervous excitability consequent upon an attack of convulsions. Their employment, however, in infants and young children, must be earefully watched; small doses being given at first, and gradually increased, if their effects are found to be of a soothing character. Opiates have been extolled by some practitioners, as an effectual means of arresting the paroxysm, when given during its presence. (Lowder, Neill, Blundell.) Dr. Blundell, restricts them to eases verging to the chronic form, and attended with distress and restlessness, and they may probably be advantageous, also, in those eases in which the convulsions appear to be excited by intense pain of the intestinal canal; they are, however, invariably a doubtful remedy, during the presence of the convulsive paroxysms. Even in that state of nervous excitability already described, as sometimes remaining after the cessation of the convulsions, we should, as a general rule, prefer either tincture or extract of hyosciamus; it may be given in conjunction with alkalies and light tonics.2 Brachet employed the hyosciamus in combination with the oxyde of zinc, varying the dose according to the intensity of the symptoms, and the age of the child. Schmidt gave it in conjunction with the oil of valerian, and carbonate of soda, and North, combined it with sulphate of quinia.d

*R.—Infus. gentian. 3j.
Syrup. rhei, 3ss.
Tinc. hyosciami, M lxxx.
Bi-carb. sodæ, 3j.—M.
A teaspoonful every three hours.
Or, R.—Pulv. calombæ, 3i-3ii.
Pulv. zingiber. 9ij.
Ext. hyosciami, gr. xij.
Magnes. calc. 9ij.—M.
f. chart. No. xij.
One every three hours.

PR.—Oxyd. zinci, gr. xxiv.
Ext. hyosciami, gr. xij.—M.
f. chart. No. xij.
One to be given every two or three hours.
PR.—Carbonat. sodw, 3j.
Syrup. rhei aromat. 3ji.
Ol. valerian. 1 xvi.
Ext. hyosciami, gr. xvi.—M.
A teaspoonful to be given as a dose, three times a day.

dR.—Aq. Cinnamon. Ijss.
Sulph. quiniæ, gr. viij.
Acid. sulphuric. dilut. M viii.
Syrup. zingiber. Iss.
Ext. hyosciani, gr. xvj.—M.
Dose, a tea spoonful every three hours.

Beneficial, as we know from experience narcotics and tonics to be, during that state of prostration and nervous excitability, which is so commonly met with after the subsidence of severe attacks of convulsions in children, we would caution, in the strongest terms, against their being commenced with, before every symptom of undue determination to the head, of acute irritation of the brain, or of general febrile excitement, has been subdued, and every source of irritation removed from the alimentary canal. The worst consequences are to be apprehended from the too early administration of narcotics and tonics in cases of infantile convulsions.

Nothing need be said in relation to the hygienic measures to be pursued, in order to restore health and vigour to the system of the patient, and to guard against a subsequent recurrence of the convulsive attack; they are precisely the same as those directed in cases of

predisposition to hypertrophy of the brain.

Where a paroxysm of convulsions is threatened, in cases in which blood letting is not indicated, compression of the carotids has been recommended. (North, Blaud, Stroehlin.) Drs. Blaud and Stroehlin.

both report cases in which it was perfectly successful.

A very peculiar form of infantile convulsions has recently been observed. It consists in repeated bobbings of the head forward, at first slight and occasional, but becoming, in process of time, so frequent and powerful, as to cause a heaving of the head forwards, towards the knees, succeeded by an immediate return to the upright position, somewhat similar to the attacks of emprosthotonos. In one case, these bowings were repeated at intervals of a few seconds, ten, twenty, or more times, each attack, which continued from two to three minutes, and recurred, twice, thrice or oftener, in the day; the attack occurring whether the patient was sitting or lying. During the attack, the child retained his consciousness. (J. W. West.) other cases that have been since recorded, (Barton, Bennett,) in their general symptoms, differ in no degree from that of Mr. West, with the exception of that of Dr. Bennett, in which the disease presented a more aggravated form. Sir Charles Clarke has seen four cases of the disease, and from the peculiar bowing of the head, has named it the Salaam Convulsion; Dr. Locock has seen two cases. One of Sir Charles Clarke's cases recovered perfectly, the other became paralytic and idiotic and died at the age of seventeen. Mr. West has heard of two other cases—one of the patients lived to the age of seventeen; the other to nineteen,—both became idiotic. The sex and ages of the patients whose cases are on record, are one female of seven years, and two boys of one and six years—death did not occur in either;

in the female and one of the boys the disease appears to have ceased.

Of this strange form of convulsions, the pathology is still a subject for future investigation; and until that is ascertained, its treatment

must be tentative and experimental.

Previously to leaving the subject of convulsions in children, it may be proper to say a word or two upon a form of convulsive disease, that has been lately described, consisting in a powerful contraction of the muscles of the extremities. (Jadelot, Guersent.) It principally attacks young infants, and children approaching the age of puberty, and is unattended with any appreciable lesion of the nervous system. The muscles of the parts affected are rigid and tense, and are often distinctly marked, and prominent, beneath the skin. This convulsive contraction of the muscles, gives a remarkable rigidity to the wrists and fingers; the former are slightly bent on the fore-arm, and the latter upon the carpus, and separated from one another, requiring force to bend or straighten them. The disease is sometimes limited to the superior extremities, but most frequently affects also the inferior; in these latter, the same phenomena are then observed, as in the former, excepting that the feet are forcibly stretched on the leg, instead of being bent. The contraction may persist for several hours, days, or even sometimes for several years, and then cease spontaneously; after a time, however, it may reappear, and this may occur repeatedly. The muscles of the other parts of the body are unaffected, as are also the intellectual faculties, respiration, and the digestive functions; the pulse is sometimes accelerated, but is generally

The disease is most liable to occur in children of a nervous and irritable temperament; and appears to be sympathetically produced by intestinal worms, difficult dentition, or some gastro-intestinal irritation. It sometimes occurs in females towards the period when the catemenia are about to be established; it may terminate fatally, but most frequently the result is favourable. (Jadelot.) The most careful autopsy has detected no appreciable alteration, either in the brain or spinal marrow, nor in any of the nervous trunks. The affected muscles were in a state of hypertrophy, their pale tissue being filled with a considerable amount of fat. (Guersent.)

Essential contractions of the muscles in children (Guersent) are sometimes general, and sometimes local; among these last, M. Guersent ranges torticolis, cramps, tonic spasms of the muscles of the side,

&c.

Tonic spasm of the muscles of the flanks, with shortening of the corresponding lower extremity, has been observed in children of seven or eight years of age, and has been mistaken for an affection of the hip joint. (Beclard.) Sometimes the muscular contractions are almost general, and the patient is affected with immobility and stiffness of the trunk and limbs, as though the body was composed altogether of hard and solid parts. This contraction, so

long as it is produced by an affection of the spinal nerves only, does not endanger the life of the patient, but it becomes more serious when from disease of the encephalon and ganglionic nerves, as in traumatic tetanus. (Guersent.)

Among the causes of these essential contractions, as he terms them, M. Guersent enumerates exposure to cold while the body is in a state

of perspiration, and the presence of worms.

The treatment of this form of tonic convulsions will consist in a great measure, in the use of warm or vapour baths, and frictions with oil of almonds or narcotic liniments; dry friction to the skin, the application of bags filled with warm ashes, and gentle purgatives. (Jadelot, Guersent.) M. Jadelot recommends also, cold affusions; internally, camphor or valerian, and frictions with ether or the tincture of digitalis. M. Guersent directs frictions with a liniment containing laudanum, and if this is unsuccessful, but not otherwise, opium internally. Diaphoretics, as infusions of borage, and the acetate of ammonia, have been recommended, as also the sesquicarbonate of iron, in large doses. If the patient is of a plethoric and vigorous habit, and the muscular contraction has occurred suddenly, we should not hesitate to resort to venesection. (Guersent.) Contrivances to produce extension of the contracted parts have been tried, and have succeeded in some cases, when seconded by the employment of baths, emollients, &c. The section of the contracted muscles, has, also, been proposed, but the success attending this measure is not such as to recommend its general employment.

4.—Acute Meningitis.

By many writers on discases of children, the whole of the inflammatory affections of the brain are included under the general term of hydrocephalus. This, however, is incorrect, the acute forms of cerebral inflammation occurring in children, are not invariably productive of extensive serous effusion, and their phenomena differ in many important particulars from those by which that form of cerebral affection to which the term hydrocephalus is more strictly applicable, is ordinarily accompanied. Acute meningitis, it is true, does not very frequently occur as an original disease, in the early periods of life; it is nevertheless, a very frequent consequence of many of the affections peculiar to infancy and childhood, and requires to be studied with a good deal of care, as it often steals on very insiduously, and the phenomena of its early stage are, in many cases, very apt to be overlooked or misunderstood.

Among the earliest symptoms of cerebral disease, is a marked change in the disposition and deportment of the child. He becomes listless and inactive, peevish, fretful and restless, with a vacant, abstracted air, and look; is indifferent to the objects which before most attracted his attention, and is with difficulty soothed and diverted. The child is unusually wakeful, or if he falls into a doze, this is broken by repeated starts and cries. The external senses become morbidly

acute. The child starts and cries at the slightest noise; is averse to being touched or handled, and impatiently withdraws his eyes, when they are accidentally directed towards the light; and even in the ordinary light of his chamber, the eyelids are often but half unclosed, and the brows drawn down, giving to the countenance a kind of habitual frown. The pupils are most generally contracted, and occasionally there is an injected state of the conjunctiva. Strabismus, or a rolling of the eyes upwards and outwards, is sometimes observed. When the child is old enough to give an account of his sensations, he complains of frequent, often constant headache, while the younger infant will carry its hand repeatedly to the head, or roll the latter from side to side upon the pillow or nurse's lap. Frequent twitchings of the muscles are not uncommon; rigid extension of the upper or lower extremities, or more frequently a clenching of the hand, with the thumb bent firmly upon the palm, or a drawing of the head back, with rigidity of the muscles of the neck. In other cases, the patient exhibits a state of apathy and inertness. He is constantly dull and listless, and frequently moans, gaps or sighs, and when aroused, is fretful and morose. His sleep is disturbed and broken. The countenance is habitually pale and sunken, though often marked with transient flushes. If the patient is able to walk, his gait is feeble and staggering, and he is frequently observed, in advancing, to raise the foot, as if stepping over some object. (Gölis.) Headache is occasionally present; more generally the patient complains of a sense of weight over the forehead, or giddiness. In some cases, with these symptoms, there is a morbid acuteness of the external senses, or there may exist more or less obtuseness of sensation.

In most cases, there is a degree of febrile excitement, especially towards evening. The skin is dry, but not much increased in temperature; the pulse and respiration are accelerated, but often variable; the lips are dry and often cracked; and the child frequently picks or rubs the nose and mouth. There is usually increased thirst and loss of appetite, though occasionally the appetite is voracious or capricious. The tongue presents upon its surface a coating of whitish or yellow mucus, and is often red at its edges and apex; the breath has a sickly, feetid odor. The bowels are in some cases obstinately costive, and in others affected with diarrhea, the discharges being composed of a sour, frothy mucus, of a green, almost black, or pale colour. There is frequently more or less tension of the abdomen, with tenderness of the epigastrium upon pressure.

These various symptoms, all of which are not, however, invariably present in every case, and in some are entirely wanting, are evidently dependent upon simple irritation of the brain, or upon irritation, accompanied with hyperæmia; and according as one or other condition predominates, the patient presents symptoms of excitement or of depression. In addition to the cerebral symptoms, there is also present, in the majority of cases, those of gastro-intestinal irritation or inflam-

mation.

The symptoms we have just described may continue, with slight variations in intensity, diminishing for a short period, and then recurring again with their former, or increased violence, for many weeks; or in a few days and sometimes in a few hours, a violent attack of convulsions may ensue, followed by the symptoms of cerebral inflammation. These, when the inflammation is seated at the superior surface of the hemispheres, are, increased heat, with acute, darting pain of the head, vertigo, redness and turgescence of the face, an anxious. suffering expression of countenance, contracted brow, intolerance of light and sound, contraction of the pupils, injection of the eyes, vomiting and intense fever. The pain of the head, which is principally referred to the forehead and temples, though occasionally it is seated in the upper or back part of the head, is often accompanied by a violent throbbing, and a sense of constriction around the forehead. It increases in violence at short intervals, which excites the peculiar, sharp, wild scream, so characteristic of acute affections of the brain in children. During the exacerbations of pain, there is increased flushing of the face, as well as of the peculiar suffering expression of countenance. In the intervals of these exacerbations, the child often rolls his head from side to side, and saws the air with his arms, moaning, or complaining of his suffering, or he falls into a state of drowsiness, and grinds violently his teeth. The countenance is generally flushed, but in some cases the flushing occurs only during the exacerbations of pain, the face in the intervals, being decidedly pale. Vertigo is often present. The eyelids are generally, firmly closed, and, in some cases, the patient resists every attempt to open them. Slight twitchings of the muscles of the face are not unfrequent. The pulse is increased in frequency, and most generally, is full and hard; the respiration is accelerated, but often interrupted by long, deep sighs. There is heat and dryness of the skin; a loaded state of the tongue, which is usually white and clammy; increased thirst, and loss of appetite. The bowels are either costive, or affected with diarrhoea. the discharges being usually dark and offensive; the urine is spare in quantity and high coloured.

If the disease continues, the patient becomes more and more drowsy, and, finally, completely comatose; the body loses its increased heat, and frequently becomes chilly; diminished temperature of the extremities is often an early symptom. The external senses lose, by degrees, their morbid acuteness, and finally become morbidly obtuse. The pupils are alternately contracted and dilated, but at length become permanently dilated, and insensible to the brightest light. The eyes are often affected with strabismus, or the eye balls have a rolling tremulous motion, or are permanently turned upwards and outwards. The hearing becomes more and more dull, and finally, there is a total insensibility to sound. The face becomes pale, cold, and the features shrunk; the eyes become dull and sunken, and in the progress of the disease, perfectly blind. Convulsive twitchings of the muscles of the face and extremities, are now more frequent and violent. Convulsions

of the limbs, alternating with a state approaching to paralysis, or convulsive movements of certain sets of muscles, with imperfect paralysis of others, are not unfrequent; but in the progress of the case, when complete coma ensues, the whole of the voluntary muscles become completely relaxed. The pulse decreases in frequency, and becomes weak and soft, but at the same time, extremely variable; being at one moment increased in frequency, or in strength, and the next remarkable for its slowness and feebleness; it is frequently greatly accelerated upon the slightest exertion, and becomes again slow, as soon as the exertion ceases. Often immediately preceeding dissolution, the pulse suddenly acquires a remarkable increase in frequency, beating often with great regularity, from 120 to 160 and upwards, strokes in a minute. The respiration also becomes quick and regular, but at the moment of dissolution becomes again slow, and often stertorous.

The respiration is marked by irregularity and inequality. Long, deep sighs are often succeeded after a pause of some duration, by frequent, short, quick respirations; or there is a regular alternation of a number of slow, and a number of quick, gasping respirations. The tongue becomes of a dark brown colour, more loaded, dry and parched; the lips and teeth are covered with dark coloured sordes, and the bowels are obstinately costive, until towards the fatal termination, when there usually takes place involuntary discharges of the fæces, as well as of the urine. The patient continues for a long time, able to swallow, and before the coma has become complete, will often take food with apparent greediness, if it be introduced by means of a spoon, into the back part of the mouth. There generally occurs more or less tympanitic tension of the abdomen. As the patient approaches the period of dissolution, the surface becomes icy cold; cold clammy perspirations break out, and the face assumes a sunken. ghastly aspect. It not unfrequently happens, that in the early period of the stage of collapse, a sudden, but temporary amelioration of the symptoms occurs, the patient brightens up, recognizes his friends. and even takes an interest in surrounding objects; this will often continue for a day, and give to the inexperienced, hopes of his final recovery; but it is finally succeeded by a return of the coma, and other symptoms, and often, a rapid, fatal termination. The continuance of the disease is very variable, occupying often from one to two or more weeks.

When, however, in acute meningitis, a considerable extent of the membranes over the superior surface of both hemispheres is affected, the disease, in place of running the protracted course just described, particularly in robust and plethoric children, may suddenly terminate at an early period, by the occurrence of violent, general convulsions, succeeded by deep coma and death; while in meningitis of the base of the brain, the disease often continues for several weeks; the patient exhibits in these latter cases, greater, and more constant drowsiness, verging, at an early period, into complete coma, and in the latter stages, more frequent convulsive movements, or tonic contractions of the

muscles, alternating with partial paralysis, and finally succeeded by

complete muscular relaxation.

The regular course of the disease, commencing with symptoms of more or less excitement, succeeded in a shorter or longer period by those of depression, and finally of complete collapse, is, not unfrequently, interrupted, either by the simultaneous occurrence in the same cases, of violent febrile excitement, convulsions, stupor, and partial paralysis, or by the occasional and often repeated alternation of a state of stupor

with the phenomena of excitement.

The appearances presented upon dissection, in cases of death from acute meningitis, are chiefly, injections of the arachnoid membrane and pia mater, and effusions of serum, lymph or pus. The injections of the arachnoid, are, in general, of very limited extent, and occur at a few points only; either at the upper surface or base of the brain, and occasionally within the ventricles; or, in place of these injections, the membrane may present a slight degree of thickening and opacity, which gives to it an opalescent or milky appearance. The membrane is often unusually dry, when death has occurred at the onset of the inflammation. When the disease has continued for a longer period, more or less effusion will be observed upon the upper surface of the membrane; most commonly of a limpid, serous fluid, but occasionally flocculent and turbid, from an admixture of lymph or pus. Occasionally, the arachnoid upon the surface of the hemispheres, or at the base of the brain, is covered with a pseudo-membranous layer, of a greenish white colour. The injection of the pia mater, in the form either of distinct vascular arborescences, or a bright, uniform redness, either diffused, or occurring in circumscribed patches, according to the less or greater intensity of the inflammation. Effusion may exist in the cellular tissue, between the pia mater and arachnoid membrane, either of clear serum, albuminous serum, or of pus. When the serum contains much albumen, in place of gradually oozing out, when the arachnoid is punctured, it is detained in the meshes of the sub-arachnoid cellular membrane, which gives to it a gelatinous appearance. Pseudo-membranous exudations, of a greenish-white colour, and often of considerable thickness, may form on the surface of the pia mater, either at the upper surface of the hemispheres, or at the basis of the brain. When pus is effused, it may be either liquid or concrete. When the effusion of lymph or pus is in considerable quantity, it often separates the convolutions, and penetrates to their utmost depths. This is most commonly met with at the vertex and base of the brain, and about the junction of the optic nerves, where there exists a considerable amount of loose cellular tissue. Tubercles are occasionally met with, but these occur more frequently in the sub-acute form of meningitis, than in the strictly acute. There is very often adhesions between the pia-mater and brain, preventing the former from being detached without lacerating the cortical substance of the latter, which is not unfrequently reddened, and occasionally softened to a greater or less extent.

Among the predisposing causes of acute meningitis the most important is evidently the age of childhood. It unquestionably occurs more repeatedly anterior than subsequent to puberty. Guersent places the most common age for its occurrence between the fifth and fifteenth years; -so far as we are enabled to form a conclusion from the data within our reach, it would appear to occur more frequently in Philadelphia between the seventh month and seventh year. The condition of the brain at this age, and the facility with which irritations may be excited in it from various causes, render it peculiarly liable to inflammation of various grades. This predisposition is increased by a plethorie habit, hereditary irritability of the nervous system, and by precocity of intellectual development, subjecting the brain to premature excitement. The exciting causes are external injuries of the head from blows, concussions, falls, &c., violent and long continued paroxysms of crying, difficult dentition, the sudden suppression of ehronic cutaneous cruptions, especially those which occur about the head and face, the imprudent drying up of a long continued discharge from ulcerations behind the ears; in the majority of cases in children, however, acute meningitis occurs in the course, or towards the eonclusion of other disease, as the various forms of irritation and inflammation of the alimentary canal, pncumonia, scarlatina, rubeola, and pertussis; deep-seated inflammations of the ear, very generally terminate, in children, in aeute meningitis. We have repeatedly seen it, also, produced in children by insolation.

Acute meningitis is, under all eireumstances, a serious disease; especially when it occurs in the course, or subsequent to other affections, when the patient is already exhausted, and active treatment is inadmissible to the extent which is necessary for the cure of every form of acute inflammation of the brain; in many cases, also, the course of the disease is so extremely rapid as scarcely to allow time for the employment of the appropriate remedies, even when it is detected in its earliest stage. Nevertheless, in robust children, whose vital powers are unimpaired by pre-existing disease, a vigourous treatment, commenced early in the acute stage, will very often quickly arrest the progress of the inflammation and preserve the life of the patient. The favourable indications are, an early abatement of the peculiar symptoms of the disease; a reduction of the morbid acuteness of the external senses; the disappearance of the febrile excitement; the return of natural quiet sleep; the recurrence of the secretions; the tongue becoming moist and clean, the skin soft and cool, the bowels open and the evacuations natural; the urine more copious and lighter coloured; the pulse more soft, slow, and equable, and the respiration less frequent and more regular; together with an abatement of the heat, pain and tension of the head, and a return of the ordinary

expression of the patient's countenance.

There are few diseases that occur during childhood, in which it is more important to watch the slightest premonitory symptoms, than those which affect the brain; their onset may, in many instances, be prevented, when their cure, after they have become fully established, is doubtful, if, perchance, possible. This is particularly true of acute meningitis; a careful attention to the early symptoms indicative of irritation and hyperæmia of the brain, will often enable us to guard the patient against an attack, that were it to occur, would, in all probability prove promptly fatal. The treatment of the premonitory stage, will depend, in a great measure, upon the nature of the particular exciting cause in each case. When it occurs at the period of dentition, the gums should be carefully examined from day to day, and if swollen or inflamed, should be freely scarified, or divided down to any tooth that may be advancing towards the surface; at the same time attention should be paid to the bowels, which, if costive, should be freely opened by a brisk but mild unirritating purgative; a full dose of calomel, followed by castor oil, magnesia and rhubarb, or mild enemata, should be preferred; and, subsequently, small doses of calomel, combined with ipecacuanha and magnesia, at proper intervals, with an occasional dose of castor oil, will, in many cases, be required to ensure their regular evacuation; the daily use of the warm bath, followed by gentle friction to the surface, will form a powerful auxiliary to the other remedies. In cases of undue nervous excitement, with determination of blood towards the brain, nothing is better calculated to equalize the circulation, and moderate the morbid irritability of the system, and at the same time to promote the regular healthy action of the stomach and bowels; its effects are in all cases beneficial, and in many, it is the very best tonic and anodyne we can employ. The temperature of the bath should be regulated by that of the patient's surface; when the latter is warm and dry, a tepid bath will be proper; but if the temperature of the surface is the least reduced, or there is any tendency to chilliness, the bath should be decidedly warm. The patient's head should be kept cool by cutting or thinning the hair, if this be thick and long; and sponging the scalp with cold water, daily, or oftener, according to the degree of increased heat of this part, and the greater or less indications of cerebral excitement, or hyperæmia. At the same time his diet should be carefully regulated, as well in respect to quantity, as to quality; no food but the mildest and least stimulating should be given; regard being had in the articles allowed, to the age and particular condition of the patient's stomach; many articles, perfectly unexceptionable in themselves, will be found to disagree with one child, but to produce not the slightest inconvenience when taken by another. The mind of the patient should be kept free from excitement of every kind; the necessity of gentle daily exercise in the open air, in pleasant weather, should be insisted on, and attention should be paid to his clothing, that it does not overheat the body on the one hand, or expose it, on the other, to a sudden reduction of temperature from slight atmospherical changes.

When the symptoms of nervous excitability or depression appear to be connected with an overloaded state of the stomach and bowels.

from excess in eating, or from the use of improper articles of food, an emetic will be advisable, followed by a smart purgative. For infants and young children the ipecacuanha should be preferred as an emetic, the winc or syrup is very readily administered, and when given in proper doses, is sufficiently prompt in its operation; even in older children, whenever irritation of the alimentary canal is present, or apprehended, we would advise the ipecacuanha to be employed in preference to the tartarized antimony. After the stomach and bowels are freely evacuated, and the stools have assumed a natural appearance, the warm or tepid bath, daily, with a regulation of the diet, exercise, and clothing of the patient, will, very generally, restore the healthful condition of the nervous functions.

In every case where premonitory symptoms of encephalic disease present themselves, in conjunction with the other measures, it is important that the child retire to rest early in the evening, and rise early in the morning. The imprudent practice of keeping children up late at night, more especially when exposed to the excitement of lighted and crowded apartments, various noises, and probably improper food, is one of the most effectual means of inducing that state of the brain and nevous system, which so generally eventuates in

cerebral inflammation.

When, with the premonitory symptoms of meningitis, there exist any of the indications of gastro-intestinal irritation or inflammation, these should be treated by their appropriate remedies; the course of active and repeated purging, heretofore so commonly recommended to be employed under these circumstances, and continued until regular and natural evacuations are procured, may be ranked among the most efficient means of converting the case into one of confirmed and too often fatal inflammation of the brain. It is unnecessary to recapitulate here, the proper treatment to be pursued; we merely remark, that the judicious employment of leeches and fomentations to the epigastrium, alterative doses of calomel, and the other measures directed when treating of the diseases of the alimentary canal, will, with few exceptions, enable the practitioner to prevent the occurrence of even a slight attack of meningeal inflammation.

If the patient is attacked with convulsions, these should be treated

according to the directions given in a former section.

When inflammation of the brain has actually occurred, the only remedies to be depended upon, are active depletion by bleeding and purgatives, cold applications to the scalp, and derivatives to the extremities. Bleeding should be resorted to upon the very onset of the disease, and carried, within as short a time as possible, to an extent commensurate with the violence of the symptoms, and the age and vigour of the patient. If the child is old enough a vein should be opened in the arm, while the patient is in an erect or sitting posture, and the blood drawn in a full stream, until paleness of the face, or other symptoms of approaching syncope is induced; and should the symptoms of reaction with active determination to the brain again return,

the bleeding should be repeated without delay, and carried to the same extent. When we are unable, in consequence of the age of the patient, to procure blood from the veins of the arm, we may open one of the jugular veins, or apply a sufficient number of leeches to the hands or feet, and promote the flow of blood from their bites by immersion of the parts in warm water. When bleeding has in this manner been earried to as great an extent as is thought prudent or necessary, and still a slight degree of reaction or cerebral determination remains or reeurs, cups or leeehes should be applied to the temples, behind the ears, or to the nape of the neck. It is upon the prompt and energetic employment of active depletion in the early stage of the disease, that the safety of the patient will entirely depend, in all the more violent and acute attacks of meningeal inflammation, particularly when occurring in robust, plethoric children. The extent to which active depletion by bleeding or leeches is to be earried, and the frequency of its repetition, will depend entirely upon the eircumstances of each ease, and the effects produced by the remedy. Every thing depends upon the judgment of the practitioner, the correctness of his diagnosis, and the eloseness and care with which the phenomena of the disease are watched. The bleeding should be earried to a sufficient extent to prevent the occurrence of reaction, and to keep down any active determination to the brain; if suspended before this is accomplished, the remedy will be of little or no benefit; if continued beyond this point, injury will very generally be produced.

Cold applications to the sealp should be early resorted to, the hair being previously cut short, or removed with a razor. Ice powdered and inclosed in a bladder, which is made to envelope the head like a eap, is a very effectual means of applying cold; the iee cap should not, however, be continued on for too long a time; it should be removed every fifteen or twenty minutes, and a fold of linen, wet with some evaporating lotion, as two parts of water and one of alcohol or camphorated spirits, substituted; should, however, the heat of the head, with flushing of the face, return, the ice cap may be reapplied. In cases occurring in young children, or in those of a feeble constitution, simply sponging the head with cold water or an evaporating lotion, or keeping it covered with a fold of linen, constantly wet

with the latter, is preferable to the application of iee.

Active purging should immediately succeed the first bleeding, in every case in which this measure is not counter-indicated by the presence of gastro-enteric inflammation, and even here, calomel may be employed in small doses, occasionally repeated, with the best effects. We may, in most cases, administer in the commencement of the attack, a full dose of calomel and rhubarb, and accelerate its operation by purgative enemata, (the best of which, in violent cases, is a mixture of molasses, water, castor oil, and turpentine,) and subsequently by proper doses of castor oil or senna tea, with the addition of the sulphate of magnesia. After the bowels have, by this means, been actively purged, we may continue the use of the

calomel in small doses, every two or three hours, according to the urgency of the case. We are in the habit of combining the calomel with ipecacuanha, prepared chalk and digitalis. The dose of the calomel, and the frequency of its administration must be regulated by the character of the symptoms. In very acute and violent cases, from half a grain to two grains, according to the age of the patient, may be given, every one, two, or three hours. If irritation of the bowels, with frequent purging, ensue under the use of the remedy, we may add to each dose of the calomel, from one-third of a grain to a grain of the extract of hyosciamus. The employment of digitalis in the acute affections of children, is very generally objected to, and very specious reasons have been adduced in opposition to its use, especially in cerebral inflammation; on the other hand, we can only adduce our own experience in favour of its perfect safety, when cautiously administered, and its effects are carefully watched, and the beneficial influence it occasionally exerts over the disease.

> ^aR.—Calomel, gr. vj. ad xij. Ipecae, pulv. gr. iij.—iv. Cretæ, ppt. ♂ss. Digitalis, pulv. gr. iij.—iv.—M. f. chart. No. xij.

When the disease occurrs in the latter period of childhood, and is marked by symptoms of great acuteness, for the ipecacuanha and digitalis, an eighth of a grain of tartarized antimony may be substituted. The tartarized antimony in such cases, often proves an excellent remedy. We have seldom employed it in the cases of young children or infants; in whom we have never seen much good result from it,

and often its effects have been prejudicial.

After full bleeding, and the action of a brisk purgative, external revulsants may be resorted to with great advantage. The feet of the patient may be immersed in a warm sinapised pediluvium; or they may be enveloped in a blanket wrung out of hot water, in which a portion of mustard has been infused; during the use of the warm pediluvia, cold water or ice may be applied to the head, or, in severe cases, it has been recommended that cold water be poured upon the head from the spout of a tea pot, or even in a smaller stream. Infants, however, seldom bear this well, and even older children are liable to become greatly alarmed, upon its use; we have, therefore, very generally preferred the ice cap, cold sponging, or the application of a cloth wet with some evaporating lotion.

The application of blisters, when well timed, is very generally advantageous. They should never be employed until after the inflammatory excitement has been reduced by active depletion; as soon, however, as this has been accomplished, their effects are always salutary, and often surprizingly prompt. They should be applied to the nape of the neck, and behind the ears; we have never been in favour of their application to the scalp, or of keeping up a discharge from the blistered surface, by means of irritating ointments; we prefer in every

case, a succession of blisters; the blister, in young children, being kept on until redness of the skin is produced, and then followed by a light emollient poultice, and as soon as the blistered surface heals, covering it with another blister, and in this manner continuing their use so long as their derivative influence may be desired.

In the latter stage of the disease, after collapse has taken place, the application of blisters and sinapisms to the extremities has been advised, with the view of rousing the sinking energies of the system. But we apprehend that at this period of the disease little permanent benefit need be anticipated from blisters, or any other remedy;

instances of recovery being extremely rare.

By the majority of practitioners it has been advised, in every severe case of meningitis, to place the system as quickly as possible under the influence of mercury: and with that view, in conjunction with the internal use of calomel, as we have directed above, to employ mercurial inunction, either by rubbing the strong mercurial ointment upon the thighs and groins, to the extent of two or three drachms daily, or by dressing, with mercurial ointment, the blistered surfaces; continuing the inunction for two, three, or more days, according to the effects produced. The evidence in favour of this treatment, is too strong and decided, not to recommend it to our attention; recollecting, at the same time, that however powerful an auxiliary it may prove, it is by active depletion, in the early period of the acute stage alone, that our chief dependence is to be placed for the cure of meningeal inflammation. If, during the use of the mercury, the gums should become affected, it must be at once suspended; the bowels being kept regularly open by mild aperients. When a decided improvement in the symptoms of the case become apparent, the use of the mercury, both internally and externally, should be gradually suspended; care being observed neither to discontinue it too early, or to continue it too long.

During the continuance of the acute stage, every species of food should be prohibited; the thirst of the patient may be allayed by the use of cold toast, gum, or barley water. If the child is old enough, a small portion of ice, held in the mouth, will prove refreshing, and obviate the necessity of large quantities of drink being taken; after the acute stage has passed, a small quantity of plain gruel or panada,

may be allowed.

The patient should be kept perfectly quiet, and free from every species of excitement; his chamber should be darkened, and of a moderate temperature, due attention being paid to preserve the air fresh and pure by proper ventilation. His head should be elevated and uncovered, while the covering of the body should be light, but sufficient to protect it from the slightest sensation of chilliness: it is particularly necessary to attend to this in the progress of the disease, as the temperature of the surface is very apt to sink, upon slight exposure.

In cases attended with delirium, or when coma ensues, the state of the bladder should be ascertained by actual inspection, twice or

thrice a day, and if distended, the urine should be drawn off by the catheter. Stillicidium will occasionally occur, which may mislead the practitioner as to the state of the bladder, unless its condition be

examined by the hand.

During convalescence, the diet of the patient should be cautiously regulated; for a long time he should be confined to farinaceous preparations, plainly cooked, and taken in great moderation, their effects upon the digestive organs being carefully watched. Excitement of every kind, as well as too long continued application of the mind, should be avoided; the gentlest exercise should be undertaken at first, the utmost precaution being observed to prevent fatigue. The state of the bowels should be regulated by gentle aperients, if costiveness be present; or if diarrhæa occur, by some gentle astringent. For a long period after recovery, the danger of a relapse from slight causes, should be kept constantly in mind, and the patient, in consequence, should be placed under a judicious hygienic course of

treatment, until his health is firmly established.

It occasionally happens, that after active depletion has been carried as far as the circumstances of the case will warrant, and the acute symptoms entirely removed, the patient sinks into a state of deep coma, with a small, rapid, and feeble pulse, paleness of the countenance, and reduced temperature of the whole surface; in such cases, the practitioner must, by a cautious investigation of every circumstance, decide whether these symptoms are the result of an inflammatory condition of the brain, or arise from mere exhaustion. If from the latter, the cautious administration of opiates, and even diffusible stimulants, with a nourishing diet, should be commenced, and if the patient improves, a more free but judicious employment of these means, will, in a short time, restore his health; opiates are not, however, so generally useful in the comatose condition, as in the state of delirium from exhaustion, and even here they should not be pushed to too great an extent; if they do not, when given in moderate doses, quickly produce a state of calmness and refreshing sleep, they should be discontinued. Strong beef or mutton broth, wine whey, or wine itself, in small and frequent doses, will, in general, prove more efficient remedies in these cases; blisters to the nape of the neck, and sinapisms to the extremities, will often act as valuable auxiliaries. The practitioner must recollect, however, that whilst it is important to rouse the patient from the state of exhaustion upon which his coma or delirium depends, over-stimulation must be guarded against, lest in the irritable state of the brain, we suddenly excite an undue action of its vessels, which may rapidly terminate in extensive serous effusion.

5 .- Sub acute Meningitis.

TUBERCULAR MENINGITIS-HYDROCEPHALUS-DROPSY OF THE BRAIN.

Sub-acute meningitis, particularly with tubercular deposition, is probably the most frequent form of cerebral inflammation during childhood. It is that to which the term hydrocephalus is most generally applied by medical writers. By many, however, all the forms of meningeal inflammation, without distinction, have been described as hydroeephalus. Thus, the more violent forms of acute meningitis, constitute the rapid hydrocephalus, of one writer; (Cheyne;) the ataxic of a second; (Guersent;) the tumultuous or hyper-acute, of a third; (Monro, Golis;) and the inflammatory of a fourth; (Brachet, Hopfengartner;) while the sub-acute form of meningitis has been described as the slow or gradual hydrocephalus; (Cheyne;) the strumous; (Hall;) the nervous; (Brachet, Hopfengärtner.) Nevertheless, with all these subdivisions, the pathology of hydrocephalus has not been very accurately made out; the error has been in regarding serous effusion within the cranium, as an essential character of the disease, upon which its distinguishing phenomena are mainly dependent, when, in fact it is a mere consequence, and often is either entirely absent, or takes place to so slight an extent, as to be eapable of producing, of itself, little or no effect. Laennec was among the first who pointed out the frequent presence of tuberculous formations upon the pia mater and arachnoid membrane, and more rarely within the medullary substance of the brain, in cases of meningeal inflammation; these were viewed, however, by most subsequent writers, as an oeeasional complication of the disease, and, by a few, as a distinct variety of meningitis. (Guersent, Dance.) It was not until more recent researches had established the fact, that the very general and intimate connection between tuberculous deposits upon the membranes and in the substance of the brain, and the more frequent form of sub-acute meningitis in children, to which the name hydrocephalus has been commonly applied, was reeognised. (Rufz, Gerhard, Becquerel, Greene, Schmidt, Schweninger.)

Sub-acute meningitis occurs chiefly in delicate, scrophulous children, especially in those distinguished by great irritability of the brain and nervous system, with large heads and precocity of intellectual

development.

The attack is more generally preceded for a length of time, varying in different eases, by the premonitory symptoms detailed in the preceding section, than the acute form; and very commonly by the phenomena constituting the disease described as infantile remittent fever. The symptoms proper to the disease are very irregular in their progress, and various in their duration and intensity.

The attack very generally commences with increased restlessness and irritability of temper. The face is usually pale, with an occasional flush of one or both checks; the cyclids are kept in a half

thrice a day, and if distended, the urine should be drawn off by the eatheter. Stillicidium will occasionally occur, which may mislead the practitioner as to the state of the bladder, unless its condition be

examined by the hand.

During convalescence, the diet of the patient should be cautiously regulated; for a long time he should be confined to farinaceous preparations, plainly cooked, and taken in great moderation, their effects upon the digestive organs being carefully watched. Excitement of every kind, as well as too long continued application of the mind, should be avoided; the gentlest exercise should be undertaken at first, the utmost precaution being observed to prevent fatigue. The state of the bowels should be regulated by gentle aperients, if costiveness be present; or if diarrhæa occur, by some gentle astringent. For a long period after recovery, the danger of a relapse from slight causes, should be kept constantly in mind, and the patient, in consequence, should be placed under a judicious hygienic course of

treatment, until his health is firmly established.

It occasionally happens, that after active depletion has been carried as far as the circumstances of the case will warrant, and the acute symptoms entirely removed, the patient sinks into a state of deep coma, with a small, rapid, and feeble pulse, paleness of the countenance, and reduced temperature of the whole surface; in such cases, the practitioner must, by a cautious investigation of every circumstance, decide whether these symptoms are the result of an inflammatory condition of the brain, or arise from mere exhaustion. If from the latter, the cautious administration of opiates, and even diffusible stimulants, with a nourishing diet, should be commenced, and if the patient improves, a more free but judicious employment of these means, will, in a short time, restore his health; opiates are not, however, so generally useful in the comatose condition, as in the state of delirium from exhaustion, and even here they should not be pushed to too great an extent; if they do not, when given in moderate doses, quickly produce a state of calmness and refreshing sleep, they should be discontinued. Strong beef or mutton broth, winc whey, or wine itself, in small and frequent doses, will, in general, prove more efficient remedies in these cases; blisters to the nape of the neek, and sinapisms to the extremities, will often act as valuable auxiliaries. The practitioner must recollect, however, that whilst it is important to rouse the patient from the state of exhaustion upon which his coma or delirium depends, over-stimulation must be guarded against, lest in the irritable state of the brain, we suddenly excite an undue action of its vessels, which may rapidly terminate in extensive serous effusion.

5 .- Sub-acute Meningitis.

TUBERCULAR MENINGITIS-HYDROCEPHALUS-DROPSY OF THE BRAIN.

Sub-acute meningitis, particularly with tubercular deposition, is probably the most frequent form of cerebral inflammation during childhood. It is that to which the term hydroeephalus is most generally applied by medical writers. By many, however, all the forms of meningeal inflammation, without distinction, have been described as hydrocephalus. Thus, the more violent forms of acute meningitis, constitute the rapid hydrocephalus, of one writer; (Cheyne;) the ataxic of a second; (Guersent;) the tumultuous or hyper-acute, of a third; (Monro, Golis;) and the inflammatory of a fourth; (Brachet, Hopfengartner;) while the sub-acute form of meningitis has been described as the slow or gradual hydrocephalus; (Cheyne;) the strumous; (Hall;) the nervous; (Brachet, Hopfengärtner.) Nevertheless, with all these subdivisions, the pathology of hydroeephalus has not been very accurately made out; the error has been in regarding serous effusion within the cranium, as an essential character of the disease, upon which its distinguishing phenomena are mainly dependent, when, in fact it is a mere consequence, and often is either entirely absent, or takes place to so slight an extent, as to be capable of producing, of itself, little or no effect. Laennec was among the first who pointed out the frequent presence of tuberculous formations upon the pia mater and araelmoid membrane, and more rarely within the medullary substance of the brain, in eases of meningeal inflammation; these were viewed, however, by most subsequent writers, as an occasional complication of the disease, and, by a few, as a distinct variety of meningitis. (Guersent, Dance.) It was not until more recent researches had established the fact, that the very general and intimate connection between tubereulous deposits upon the membranes and in the substance of the brain, and the more frequent form of sub-acute meningitis in ehildren, to which the name hydrocephalus has been commonly applied, was recognised. (Rufz, Gerhard, Becquerel, Greene, Schmidt, Schweninger.)

Sub-acute meningitis occurs chiefly in delicate, serophulous children, especially in those distinguished by great irritability of the brain and nervous system, with large heads and precocity of intellectual

development.

The attack is more generally preceded for a length of time, varying in different eases, by the premonitory symptoms detailed in the preeding section, than the acute form; and very commonly by the phenomena constituting the disease described as infantile remittent fever. The symptoms proper to the disease are very irregular in their progress, and various in their duration and intensity.

The attack very generally commences with increased restlessness and irritability of temper. The face is usually pale, with an occasional flush of one or both cheeks; the eyelids are kept in a half

uncommonly, small and corded. In the latter stage of the disease, the patient is often affected with a total loss of sight and hearing; the sense of touch, however, very generally continues up to the last moment. The patient will occasionally lay hold of the nipple, and suck greedily, even when in a state of constant stupor, and deprived entirely of the sense of vision. At length the extremities become cold, the respiration unequal and stertorous, the pulse weaker and weaker, and death takes place, often preceded by convulsions.

The disease does not invariably attack in the same gradual manner, nor is it always preceded by the train of symptoms we have described. In many cases, the child after a few days of langour and peevishness, is attacked with symptoms of a decided febrile reaction, attended with pain of the head, flushing of the countenance, and tenderness of the abdomen. The febrile symptoms, being marked by frequent irregular intermissions. During the exacerbations, the patient is generally affected with considerable stupor, during which he occasionally starts up, and screams, in a state of the utmost apparent alarm and agitation; vomiting is frequent, and often excited by a mere change of position; the bowels are generally obstinately costive, and the expression of the countenance that of terror and suffering, or of dejection and intellectual torpor.

In some cases, without any previous manifestations of febrile excitement, the disease is ushered in by an attack of convulsions; in general, however, in such cases, there is more or less evidence of impaired health, existing previous to the occurrence of the convulsions; as a peevish and fretful, or impatient temper; deficient or variable appetite; irregular bowels; tumid abdomen; foul breath; restless and disturbed sleep, with grinding of the teeth and frequent starting.

There is, in fact, a very great diversity in the mode of commencement, as well as in the progress of the chronic forms of meningitis. The order of the symptoms may be changed; some may be absent, or only slightly marked, and others prominent and long continued. In some cases, the only symptoms indicative of the occurrence of the disease have been coma, with deep sighing, coldness of the extremeties, pallor of the countenance, and partial paralysis; while in others, the disease has commenced and run its course, with scarcely any other important symptom, than drowsiness, a slight febrile excitement, with little or no pain of the head, but a frequent desire to urinate, the urine being voided in very small quantities, and with much difficulty. (Quin, Rush, Monro, Eberle.)

Equal irregularity marks the disease in regard to its entire duraration, and that of its several stages. The first, or premonitory stage, may exist for a few days, or many weeks; the period of excitement, from a few hours to one or two days, or even longer; that of oppression, from four or five days, to two weeks; and the paralytic stage, from an hour or two, to ten or twelve days. The disease, in general,

however, runs a protracted course.

The appearances detected after death, in the brains of those who

have fallen victims to chronic meningitis, are, indications to a greater or less extent of inflammation of the membranes, principally at the basis of the brain, and within the ventricles. The arachnoid membrane is often dry, thickened and opaque; the vessels of the subarachnoid cellular tissue, are often considerably injected, and its meshes filled with serum of a whitish colour, or mixed with lymph, and occasionally with pus. The pia mater is often greatly injected, and, occasionally, more adherent to the surface of the brain than natural; its surface is almost invariably found studded with tubereles, varying in size from that of a pin's head to that of a pea;—they are generally hard, semi-transparent, and of a grey or yellowish colour. Sometimes they present themselves in patches of an inch or more in extent, but, in general, are scattered irregularly over the membrane; they follow the membrane between the convolutions, and are met with, also, imbedded in the grey matter of the brain, where they are often surrounded by a halo of redness, generally connected with an enlarged vessel, ramifying from the pia mater. (Bennett.) More rarely they are detected in the medullary portion of the brain, where they are often overlooked in consequence of their pale, semi-transparent, yellow tint. (Laennec, Guersent, Dance, Gerhard, Rufz, Coindet, Becquerel, Piet, Greene, Schweninger, Schmidt.) The lining membrane of the ventricles is occasionally injected, opaque, or covered with a pseudo-membranous exudation, or with numerous white floeculi, which become very apparent when the membrane is immersed in water. It is often easily separated from the cerebral substance. The convolutions of the brain are sometimes flattened, apparently from pressure against the scull. (Laennec, Dance.) And a case is related in which, upon opening the scull, the whole brain expanded, so that it could not again be replaced within the cranium. (Gölis.) The grey substance of the convolutions, when the sub-arachnoid tissue is strongly injected, is usually of a pale rose, or bright red colour, from morbid injection. (Charpentier.) When the brain is cut into, very frequently the surface of the incision is studded with numerous bloody points. Sometimes, however, the brain is paler and less vascular than natural;—it occasionally presents an appearance as though its substance was infiltrated with serum. (Cheyne, Gölis.) The plexus choroides is very often injected, thickened, or covered with tubercles; sometimes it is pale and discoloured, and beset with small hydatiform cysts; this latter appearance has also been found in the cellular texture of the pituitary gland. (Joy.)

Traces of inflammation in the membranes or substance of the brain, or, in other words, increased vascularity, or thickening of the membranes, and pseudo-membranous, or purulent effusion, are by no means invariably detected in cases of hydrocephalus—an affection which we have considered identical with chronic meningitis. (Abercrombie, Breschet, Bricheteau, Andral.) In some cases, the substance of the brain has been found of a firmer consistence than natural, and, to a certain extent, hypertrophied. (Laennec, Jadelot, Bricheteau,

Gölis, Schmidt.) We have seen many such instances, but invariably accompanied with decided indications of meningeal inflammation.

One of the most common lesions detected, is serous effusion, either in the arachnoid or sub-arachnoid cavities, or in the ventricles, or in all these parts at the same time. It may be to only a small extent, or in such quantity as to separate the convolutions from each other, and greatly to distend the ventricles. The greatest amount is generally met with in the lateral ventricles; and here it may occur to such an extent as to enlarge the posterior cornua, elevate the fornix, rupture the septum lucidum, and thus establish a free communication between all the ventricles. The cellular tissue of the choroid plexus, may also be distended with serum. The serum varies in quantity from one ounce to several; but seldom, it is said, exceeds six. (Gölis.) cases are attended with a much less amount of serous effusion, and, in some, there has been scarcely a trace discovered. Duchatelet.) When the serous effusion in the brain is considerable, it is often found, also, in the spinal canal. (Coindet, Dance.) The effused serum may be clear, colourless, thin and transparent; or bluish, reddish, greenish, or of a citrine hue; or it may be opaque, whey like, turbid, or puriform. It occasionally contains abluminous flocculi. In many cases it is uncoagulable, but in others coagulable. (Whytt, Vieusseux, Marcet, Baillie, Blackhall.)

The substance of the brain is, most generally, softer in consistence than natural, particularly the medullary matter in the immediate neighbourhood of the ventricles, including the septum lucidum, and fornix. This softening is of various degrees, from a slight deviation from the normal consistence, to a perfectly fluid condition of the brain,

the white substance resembling cream.

Very generally, the abdominal viscera exhibit more or less extensive evidences of disease, the liver is often inflamed, with tubercles upon its surface or in its substance, or it is otherwise diseased. (Cheyne, A. T. Thomson, Coke, Abernethy.) Inflammation, particularly follicular, of the mucous coat of the alimentary canal, occasionally, softening of the inner coat of the stomach, contraction of the canal of the intestines, and invaginations, have been repeatedly met with. (Cheyne, Abernethy, A. T. Thomson, Senn, Yeates, Barkhausen, Smith.)

Tubercles are very commonly met with in the serous membranes

of the thorax and abdomen and in the lungs. (Gerhard, Rufz.)

A strong predisposition to the occurrence of chronic meningitis, particularly the tubercular form, which, in children, is by far the most frequent, is manifestly hereditary or constitutional, in perhaps the majority of instances. The peculiar liability to the disease in some families, is often strikingly exemplified; in many, all the children dying of it, as they successively arrive at a certain age. (Quin, Underwood, Odier, Frank, Armstrong, Baeder, Cheyne, Coindet, Gölis.) It would be more correct, perhaps, to say, that peculiarities of hereditary organization, predispose to the disease; more especially the

lymphatic temperament or scrophulous diathesis, characterized by a large head, delicate, irritable, and often beautiful frame of body, prominence of the external lymphatic glands, with acuteness of intellect,

and liveliness, or rather fitfulness of disposition.

The most common exciting causes are, irritations transferred from other organs to the brain. In perhaps the majority of instances, the disease is preceded, for a longer or shorter time, by gastro-intestinal irritation; this constitutes the symptomatic form of hydrocephalus of Chevne and other writers. Chronic meningitis, may, however, be induced by blows or falls upon the head, violent mental emotion, or too early and close an application of the mind to intellectual pursuits; violent, long-continued, and frequently repeated paroxysms of crying; the sudden suppression of spontaneous or habitual evacuations; the sudden drying up of ulcerations behind the ears or various chronic eruptions, as those which occur about the head during dentition. The irritation attendent upon difficult dentition is a very frequent exciting cause. The disease is often produced by the deep seated chronic inflammations of the ear, so common in scrophulous children. It may occur, also, in the course of, or during convalescence from, various other diseases. We have already noticed its frequent connection with gastro-intestinal affections; it is likewise often developed during or subsequent to, scarlatina, measles, bronchitis, pneumonia, croup, hooping-cough, &c. The hydrocephalic form of chronic meningitis, is said to have occurred occasionally as an epidemic. (Vieusseux, Itard.)

The age most liable to the occurrence of chronic meningitis, is said to be between two and seven. Sex appears to exert but little influence in regard to the predisposition to the disease; it has been asserted, however, that during the first ten years it is most common in boys, but after that, in girls. In Philadelphia, during the ten years preceding 1842, 1861 deaths took place from hydrocephalus; of these 940, or more than one half, occurred in individuals between one and five years of age; 712, in infants under one year; 172, between five and lifteen; 11, between fifteen and twenty; and 26, in individuals over twenty years. Of the 1835 deaths under twenty years, 998 were

in males, and 837 in females.

The prognosis in cases of sub-acute arachnitis, particularly when combined with the formation of tubercles in the brain, as is most commonly the case in children, and after the disease is fully developed, must be always extremely unfavourable. The same remarks are applicable to this form of meningitis, as were made in relation to the acute. It is by directing our efforts towards the prevention of the disease, by the prompt and judicious management of its preliminary and early stages, that we shall be the most likely to secure the safety of our patient. After it is fully formed, there is but little chance of arresting the fatal course by any plan of treatment. It is, nevertheless, true, that cases of recovery have occurred, under

the most unfavourable circumstances; and it is said, even in the latter

stages. (Gölis, Odier, Mills, Bricheteau,)

The treatment of the preliminary stage, is to be governed by the nature of the symptoms present in each case; our great object being, to procure a regular and healthy condition of the various functions, and to restore a due degree of tone to the several organs; guarding, at the same time, the brain from undue excitement, and counteracting any determination of blood to it, by removing, as far as lies in our power, every cause that may have a tendency to produce this effect. It is tunnecessary to repeat here, the remarks made in reference to this subject, when treating of the preliminary stage of acute meninger.

gitis.

The treatment of sub-acute meningitis, in its early stage, must be governed by the age and vigour of the patient, and the nature and extent of the symptoms present. Blood-letting is very generally recommended, at the onset of the disease, and during the period of excitement; and there can be no doubt, that, in robust children, and when the pulse is tense, quick, and active, and the symptoms of cerebral excitement or hyperæmia strongly marked, it constitutes one of our most efficient remedies, and will often, when promptly and judiciously practised, succeed in arresting the progress of the inflammation. It is to be recollected, that the earlier the remedy is resorted to, and the more quickly it is carried to the extent judged advisable, the greater is the chance of its proving beneficial; when the indications for the employment of blood-letting are strongly marked, and the age of the child will admit of it, a vein should be opened in the arm, and a sufficient amount of blood drawn off at once, to make a decided impression upon the prominent symptoms of the case, or until commeneing paleness of the countenance of the patient warns us to desist. (Rush, Mills.) In infants, the application of leeches to the hands or feet, and encouraging the flow of blood, by immersing these parts in warm water, will very generally produce similar results to those derived from venesection, in older patients. With respect to the quantity of blood to be taken away, and the propriety of repeating the bleeding, no general rule can be laid down; it has been said, that, in infants of a year old, the abstraction of three ounces is sufficient; and that the bleeding, to a similar extent, may be repeated, in twelve hours, if necessary. (John Clark.) In judging of the extent of direct depletion, the physician, however, must be governed entirely by the character of the symptoms, and the effects of the remedy; it should be sufficient to reduce the tension and quickness of the pulse, or to produce a decided diminution of the heat, pain or sense of constriction in the head, unless symptoms of approaching syncope should previously occur. If, after the first bleeding, the symptoms of cerebral excitement again recur with equal, or nearly equal violence, it should be repeated, without delay, to the same extent. In most eases, however, in place of a repetition of the general bleeding, the application of leeches or cups about the head should be preferred; there is reason for believing, that these two modes of blood-letting, when successively employed, make a greater impression on the disease than either of them is capable of effecting when singly had recourse to. (Mills.) By some, cupping is preferred to leeches, (John Clark.) and we think, from our own experience, we have seen much more prompt and decided good effects result from their application than from leeching; they may be applied to the temples, behind the cars, and to the occiput and nape of the neck.

In those cases in which the symptoms of the first stage are of a less violent character, or the patient is possessed of little vigour of constitution, or has been debilitated by previous disease, bleeding, though still advisable, must be practised with much greater caution, and carried to a less extent; here leeching or cupping, proportioned to the extent and violence of the symptoms, should be preferred to general blood-letting. The repetition of the local depletion must be governed by circumstances; if the pulse again rise, or the heat and pain of the head recur, it may be necessary to again have recourse to cups or leeches, and probably to the same extent, as in the first instance. The utmost caution and judgment will be required in the employment of blood-letting, in the cases referred to; within certain limits, it is unquestionably calculated to produce the very best effects; but, when carried too far or too frequently repeated, it may, on the other hand, be productive of much injury. There may even occur cases, where the symptoms of exhaustion, and the general condition of the patient, will render blood-letting, to any extent, improper.

In cases accompanied with much tenderness of the epigastrium cups or leeches to this part, will always be proper, and, in many in-

stances, will prove strikingly beneficial.

Next to blood-letting, active purgatives are, perhaps, the remedy from which the most good has been derived, in the early stage of the disease. Their importance, in all cases, but especially in those in which active depletion is indicated, is admitted by every writer on the disease. Independently of removing from the bowels any irritation that may result from accumulation of fæces or vitiated secretions, they tend to counteract the afflux of blood to the brain, and to reduce excitement. In cerebral affections generally, they have been considered a remedy scarcely inferior to blood-letting. (Abercrombie.) The repeated use of active purges has been recommended, in every case, in which the bowels are torpid, or the evacuations unnatural in appearance; (Cheyne;) but we are to recollect, that the unnatural condition of the alvine discharges is not always dependent upon functional disorder of the alimentary canal and liver, but is, in many cases, connected with a diseased condition of the mucous membrane of the stomach and bowels, which repeated active purgation cannot fail to aggravate; while, therefore, in ordinary cases attended with constipation or torpor of the bowels, we should be inclined to advocate frequent purging, we are convinced, that, in those cases in which symptoms of considerable irritation, or acute or sub-acute

inflammation of the alimentary canal are present, the mildest purgatives alone should be employed, and only to a sufficient extent, to remove from the intestines any faces, or other irritating matter, they

may contain.

Calomel is, under all circumstances, the best purgative we can employ; from three to six grains, according to the age of the patient, should be early administered, and followed, in a short time, by a dose of castor oil, or sulphate of magnesia. Subsequently, the calomel should be given in small doses, and the freedom of the bowels maintained by the occasional use of castor oil, or mild, laxative enemata.

When the calomel alone does not prove sufficiently active as a purgative, it may be combined with jalap, which, when toasted, is said not to be so liable to cause griping pains; (Gölis,) with extract of colocynth and gamboge; (Schmidt;) with scammony, or with rhubarb. Elaterium has been recommended, in the more violent forms of the disease, (Elliotson,) or the croton oil. (Abercrombie.) The first, however, is very unmanageable, often producing severe watery purging attended with sickness and vomiting, and the second, though strongly recommended, by the smallness of the dose, and the ease with which it may be administered to children, we have found to be very uncertain in its operation-in one instance producing little or no effect, and in another, acting with the utmost violence. In cases in which the stomach is very irritable, it has been recommended to give one or two drachms of magnesia, saturated with lemon juice, every two or three hours; (Cheyne;) and when the calomel produces considerable intestinal irritation, it has been proposed to substitute the hydrarg. cum creta, with powdered colchicum. (A. T. Thempson.) We have seldom, however, found the calomel administered, at first, in a full dose, and repeated, in smaller doses, daily or oftener, with the occasional interposition of castor oil, a solution of the sulphate of magnesia, or purgative enemata, to fail in producing the desired effect. Small doses of calomel, combined with magnesia, and the third or fourth of a grain of ipecacuanha, will rarely be rejected by the stomach, or produce irritation of the bowels. In many cases of the disease, particularly in those attended with vitiated discharges from the bowels, we have repeatedly found the spirits of turpentine by the mouth, or in the form of enema, a very valuable purgative, and even in cases attended with obstinate torpor of the bowels, combined with castor oil, it has appeared to us to agree better with the stomach, and to aid more effectually the action of the calomel than most other articles. Independently of its action upon the bowels as a purgative, the alterative effects of calomel, if early obtained, are often, in the highest degree, beneficial.

Under precisely the same circumstances, as demand the employment of active depletion, cold applications to the head will be found particularly advantageous. (Quin, Rush, Formey, Gölis, Darwall, Abercrombie.) Cloths wet with cold water, the ice cap, or evaporat-

ing lotions, may be employed in the same manner as directed in acute meningitis, and continued until the increased heat of the head is permanently reduced. Even in cases which do not admit of bloodletting or active purgation, frequently sponging the head with cold water alone, or with the addition of a small portion of alcohol or camphorated spirits, will be found advantageous. Pouring water in a small stream, upon the head, has been recommended as particularly efficacious, in the early stage of the more violent cases, or even when coma or convulsions have occurred. (Formey, Darwall, Abercrombie,

Schmidt.)

The tartrate of antimony, in combination with calomel, has been recommended in the treatment of the sub-acute form of meningeal inflammation by many of the writers on the disease. James's powder is, however, the preparation of antimony most generally employed. (Cheyne, Monro, Stokes.) The addition of the antimony is, in many cases, a very valuable one; it is chiefly adapted, however, to the early stages. Large doses of the tartrate of antimony have been employed by a few physicians, and their effects are reported to have been decidedly advantageous. (Laennec, Mills.) But in cases attended with gastro-enteric disease, they cannot fail to do more or less harm, and should be resorted to with the greatest caution. (Guersent.)

Subsequent to bleeding, in the more severe cases, warm, sinapised pediluvia constitute an efficient means of derivation from the brain, and may be advantageously employed, in conjunction with cold applications to the head. The frequency of their repetition must be

determined by the circumstances of each case.

After the stage of excitement has passed by, blisters will often prove highly advantageous. (Rush, Odier, Percival, Cheyne, Gölis.) They should be applied behind the ears, or to the nape of the neck; and we believe, that in all cases, a succession of blisters is preferable to keeping up an irritation upon the blistered surface by the savine, or any other ointment. When there exists a considerable degree of tenderness of the abdomen, after the application of leeches, a blister over the part will often prove advantageous. As derivatives the ointment of tartarized antimony, (Monro,) moxas, (Regnault,) and various stimulating embrocations have been recommended, and may be resorted to, in many cases, with the best effects.

Digitalis has been employed, as well during the stage of excitement with a view to its sedative effects, as after effusion has taken place, to promote the absorption of the fluid by its diuretic properties. (Withering, Brown, Whytt, Currie, Cheyne, Gölis, Merriman, Windelstädt, Schmidt.) It is given, in the form of tincture, in the dose of eight or ten drops, every six hours, increasing it gradually by two or three drops at a time, until its effects are fully produced; (Cheyne;) or, in powder combined with calomel and opium. (Gölis, Currie, Merriman, Windelstädt.) The tincture we have never employed, having found it very uncertain in its effects, but in the form of powder, combined with calomel and ipecacuanha, we are convinced, that, during the early

stages of the disease, we have frequently derived very considerable advantage from the employment of digitalis.

*R.—Pulv. digitalis,
Calomel.
Pulv. ipecac. aa. gr. iv.—M. f. chart. No. xij.
One to be given every three or four hours.

Mercury early resorted to and pushed to an extent sufficient to produce its constitutional effects, is unquestionably one of the remedies from the effects of which the greatest advantage is to be anticipated. The evidence, in its favour, is of the most unequivocal character. (Percival, Dobson, Rush, Currie, Cheyne, Mills, Schmidt, Gölis.) From half a grain to one or two grains of calomel should be given every two, three, or four hours, according to circumstances, and continued daily, until swelling or tenderness of the gums, or fætor of the breath, or a decided improvement in the symptoms of the disease occur, when the calomel should be discontinued for a day or two, and afterwards, if necessary, repeated in smaller doses, and at longer intervals, until the disease is completely subdued. The good effects of mercury, in sub-acute meningitis, would appear to be altogether independent of salavation, which, as far as possible, should be guarded against. The effects of the calomel are often increased by the addition of small portions of ipccacuanha or James's powder. (Cheyne, Mills.) With the view of placing the system more quickly under the influence of the mercury, as well as in those cases, in which the use of the calomel internally produces constant nausea and vomiting, or frequent griping, with repeated greenish, slimy discharges from the bowels, one or two scruples or more of the strongest mercurial ointment, may be rubbed upon the neck, arms, and legs of the patient, as well as upon the blistered surfaces, night and morning, until the effects of the remedy are obtained.

By some, it has been recommended to combine the calomel with opium, (Cheyne, Mills,) the good effects of this combination appearing to depend upon its power of equalizing the circulation, increasing the secretions, and exciting the healthy action of the cutaneous vessels. (Mills.) The watery extract is said to be the best preparation of opium in the disease before us, inasmuch as it procures rest, by diminishing pain and irritation, without exhibiting, to any great extent, the narcotic or nauscating properties of the drug, in its ordi-The Dover's powder has likewise been strongly advonary forms. cated as a remedy, in sub-acute meningitis. (Brooke, Percival, Cheyne, Crampton.) There can be no doubt, that, in many cases, after bleeding and active purgation has been carried to a sufficient extent, a judicious employment of opium, especially in combination with calomel and ipecacuanha, will be beneficial, by diminishing any irritation of the bowels, and abating undue nervous excitability; but, in the early stages of the more violent cases, opiates, even in the minutest doses, will invariably do harm by increasing the congestion of the brain. In cases in which opium is found to produce

disagreeable effects, some of the earlier German writers strongly recommend the substitution of moderate doses of hyosciamus in powder or extract; and from a pretty extensive use of the article, we are persuaded, that, in the disease under consideration, as well as in most of the affections of childhood, where we desire to allay pain and irritation or undue nervous excitability, it will often prove a very

valuable remedy.

After effusion has taken place, the use of various diuretics, and of iodine, has been recommended, with a view of promoting the absorption of the fluid from the cavities of the brain; of their success, under these circumstances, we cannot speak from experience. They may, however, prove, in some cases, valuable auxiliaries to the other remedies employed, and hence are worth a trial. We have already spoken of the use of digitalis; by some, the squill, in combination with calomel, has been strongly recommended. (Percival, Bricheteau, Schmidt.) The vinum scille, in combination with the tincture of squill, has been used externally, by rubbing it upon the scalp. (Kleber, Bischkoff.) By others, the turpentine in enemata, or formed into a liniment, and rubbed into the scalp, has been considered as the most powerful diuretic in hydrocephalic cases; (Copland, Rösenberg;) it unquestionably, in many cases, produces a very good effect; we have used it internally, in enema, and in the form of liniment to the epigastrium, and along the spine, and, we think, always with advan-The iodine, either in the form of the proto-ioduret of mercury externally, or of the iodide of potassium, combined with diuretics, is said to have proved successful, in many cases. The iodide of potassium, in large and frequently repeated doses, a is said to have proved successful, in cases where paralysis has already occurred and death appeared impending. (Röser.) The colchicum, the sweet spirits of nitre, the compound spirits of juniper, and various other diuretics, have been recommended, but the evidence in their favour, is not sufficient to recommend them strongly to our notice.

> *R.—Iodid. potass. Jj. Aquæ destill. Jss.—M. Thirty drops to be given every hour.

The simple vapour bath (A. Hunter,) or the vapour bath impregnated with vinegar, (Itard.) has been noticed as a remedy of very considerable power, even in the last stage of the disease; we believe, that it will frequently be found of decided advantage, after the stage

of excitement has passed.

Various symptoms occurring in the course of the disease, will occasionally require particular remedies. When considerable tenderness of the abdomen occurs, we have already noticed the propriety of applying to this part leeches followed by blisters. In milder cases, warm, emollient cataplasms will supersede the necessity of blisters. Vomiting is often a distressing symptom; it will, in many cases, be effectually relieved by minute doses of calomel combined with mag-

nesia and ipecacuanha, and the application to the epigastrium of a sinapism, or frictions with spirits of turpentine; ten, fifteen, or twenty drops of the spirits of turpentine internally, or half a drachm of turpentine mixed up with thin starch, and administered as an enema, we have repeatedly found to allay very promptly the irritability of the stomach, in this disease.

*R.—Calomel. gr. iij.

Magnes. calc. gr. xxiv.

Ipecac. pulv. gr. ij.—M. f. chart. No. xij.

One to be given every one, two or three hours.

Convulsions may be relieved by cups to the nape of the neck, frictions along the spine, warm pediluvia, cold effusion upon the head,

and turpentine enemata.

From the very onset of the disease, the patient should be confined to his chamber, which should be kept darkened, well ventilated, and of a moderate temperature, and every possible means should be adopted to screen him from noise of every kind, and other causes of excitement. He should lie upon a hair mattress, with his head somewhat elevated, and be covered with no more clothing than is sufficient to keep him of a comfortable temperature. All sudden, or, indeed, all unnecessary movements of the patient should be avoided; and the utmost kindness should be invariably observed by the attendants, in their deportment towards him. His diet and drink, in severe cases, and during the stage of excitement, should be restricted pretty much to simple mucilaginous fluids, given cool. At a later period, after the stage of excitement has fully passed, plain water gruel or panada may be allowed; and in the last stage, when collapse has occurred, the diet should be nourishing, but mild and easy of digestion, as beef tea, plain chicken or mutton broth, animal jellies, &c.; at the same time, we may attempt to support the strength of the patient, by the cautious use of ammonia, wine whey, valerian or camphor, combined with infusion of gentian, calombo, or quassia. During convalescence, the utmost care should be observed to prevent The bowels should be kept regularly open by gentle a relapse. laxatives; the diet should be of the mildest and least irritating articles, but, at the same time, sufficiently nourishing; the patient's clothing should be cautiously adapted to the temperature of the season, and, in quantity and material, calculated to prevent the influence of sudden changes in the weather; every source of fatigue or excitement should be avoided; but, at the same time, daily gentle exercise, in a dry, pure air, will be attended with the best effects. Sponging the body daily with warm salt water, the temperature being gradually reduced as the activity and tone of the patient's system is gradually increased, will act as a safe and very powerful tonic. The patient's hair should be kept short, and only a light covering worn upon the head. In cases in which there is a strong predisposition to a renewal of disease in the brain, it has been recommended, and the recommendation is certainly a judicious one, to insert an issue in the neck, or

to keep up a constant irritation, for a considerable period, at this part,

by the use of the ointment of tartarized antimony.

Several writers have described a morbid affection incident to the period of infancy, resembling, in nearly all its symptoms, the later stages of sub-acute arachnitis, but resulting invariably from exhaustion, (Hall, Gooch, Abercrombie, Schmidt,) and which it has been proposed to designate by the term hydrencephaloid. (Hall.) We believe, however, as has been already pointed out by an able writer, (Bennett,) that this affection differs only from that described above, in its occurring in children labouring under considerable exhaustion and debility. This variety of the disease unquestionably demands a very important modification of treatment. All debilitating remedies are positively injurious. The strength of the patient should be supported by the breast milk of a healthy nurse, or if weaned, by beef tea, plain mutton or chicken broth, and similar articles of nourishment; where the exhaustion is very great, wine whey, the carbonate of ammonia, or even wine itself, may be required. These should be exhibited, however, in moderate portions, and their effects closely and carefully watched. In young children, the exhaustion is very frequently the result of extensive serous diarrhæa; this, if it continue, should be checked as quickly as possible, and we believe the remedy, upon which, in these cases, the most dependence is to be placed, is the acetate of lead given in solution, in the dose of a grain, every two or three hours by the mouth, and to the extent of three or four grains as an enema. In many cases, however, the chalk mixture, with the addition of catechu or the decoction of the dewberry root, will succeed. After the diarrhea has ceased, the bowels may be regulated by small doses of calomel, prepared chalk, ipecacuanha, and extract of hyosci-The warm bath will be found, in most cases, a very valuable remedy, and should be repeated daily. The patient should be kept, in a recumbent posture, and where he may enjoy the advantages of a free circulation of air, and the temperature of his extremities maintained by dry friction and flannel. If the patient sink into a comatose condition, blisters or sinapisms should be applied to the nape of the neck, and to the lower extremities, and frictions made with some stimulating liniment along the spine.

Chronic Hydrocephalus. This form of disease is very generally congenital, or is developed soon after birth. It consists in an accumulation of a serous fluid, often to an enormous extent, generally within the ventricles of the brain, but occasionally, upon its surface. When the disease occurs subsequently to birth, it is generally developed slowly and insensibly; being seldom preceded by any very marked symptoms; the first thing that attracts attention being an enlargement of the whole head, which sometimes acquires an immense size—the sutures becoming separated, the fontanelles enlarged, and presenting, as it were, tense, semi-transparent tumors, in which a distinct fluctuation is perceptible upon pressure. The head gradually enlarges, as the effusion increases within the cranium,

until, in many instances, its size becomes so great, that the patient is no longer able to support it erect, and it droops, continually, when he is in the erect position, upon the shoulder, or forwards upon the chest; the face, at the same time, retaining its natural size, the physiognomy of the patient acquires a very peculiar expression. As the disease advances, the senses become blunted, the intellectual powers impaired, and the muscular power so much enfeebled, as to prevent the patient from moving about, or using the least exertion. Convulsive movements, paralysis, and coma, occasionally occur; but generally the patient sinks into a state of deep stupor, which terminates, sooner or later, in death. In some instances, in place of a general enlargement of the head, a large tumor gradually forms at the situation of the posterior fontanelle, or somewhat lower, pressure upon which, produces coma or convulsions.

Patients affected with chronic hydrocephalus, may live for many years, without any very decided impairment of the intellectual faculties. Occasionally, the sense of sight, hearing, and taste, are destroyed permanently, or only for a time; in other cases, one sense only, is affected; in others, two or more, the rest remaining entire. Emaciation is a common symptom; as is also some degree of giddiness in the erect posture. Strabismus is frequently, and opacities of the cornea, are occasionally, seen in those affected with the disease. Death often takes place, from the intervention of other affections; very frequently ulceration of the bowels, sometimes phthisis pulmonalis, and occasionally, inflammation of the tissues of the lungs. (Mackintosh.)

Upon examination after death, the brain presents the appearance of an extended bag, with thin parieties, filled with a serous fluid. It was supposed that, in these cases, the substance of the brain had become absorbed, in consequence of the pressure of the fluid within; but upon a more accurate examination, it is found that no portion of the brain is destroyed, its convolutions being merely deployed. In other cases, however, the brain has been found in a perfectly rudimentary state. (Gall, Spurzheim, Cruvielheir, Breschet, Billard.) The lining membrane of the ventricles is occasionally vascular, and frequently very much thickened, and easily separated from the medullary matter to which it is attached. (Mackintosh.)

Chronic hydrocephalus is not a very frequent disease in Philadelphia. We have never seen a case, either congenital or developed

subsequent to birth.

In the treatment of chronic hydrocephalus, our chief object must be, to palliate the symptoms as they occur, by the occasional application of leeches, the use of repeated blisters, the tartar emetic ointment, or issues. The bowels should be kept regularly open, by gentle aperients, and the diet of the patient carefully regulated. Mercury has been strongly recommended, and is deserving of a fair trial.

The radical cure of the disease has been attempted, by properly regulated and continued pressure applied to the head; and cases of success, from this plan of treatment, have been published. (Blane,

Barnard, Engleman.) But the plan, in favour of the feasibility, safety, and success of which, the greatest amount of evidence has been adduced, is that of puncturing the brain, drawing off the effused fluid, and preventing its reaccumulation, by pressure applied around the head. (Rossi, Vose, Dugas, Graefe, Höflung, Barnard, Conquest, F. Cooper, Russel.) The operation consists in passing a small and delicately constructed trochar, into one of the lateral ventricles, and drawing off as much fluid, as the powers of the constitution will admit of. The most eligible spot at which the trochar can be introduced, is in the course of the coronal suture, about midway between the crista galli process of the ethmoid bone, and the anterior fontanelle, so that the danger of wounding the corpus striatum is avoided on the one hand, and the longitudinal sinus on the other. The instrument usually penetrates about two inches, and in most cases, the serum discharged is colourless, but occasionally tinged with blood. Sometimes, on withdrawing the trochar, the water will not flow, until a probe has been passed along the canula, to remove portions of brain which block it up. After taking away all the fluid that can be removed, consistently with safety, the head, which should always be steadily compressed, by an assistant, during the operation, may be strapped with adhesive plaster, so as retain its diminished size, and avert the fearful consequences of suddenly removing long-continued pressure from the brain. (Conquest.) In no instance, however, has a clearly marked congenital case been permanently benefited; the cases in which the operation has been most successful, are those in which the effusion has manifestly resulted from an inflammatory condition of the brain, and in which cerebral excitement follows the operation. (Conquest.)

It is proper to remark, however, that, even in these, the operation has been found unsuccessful in numerous instances; (Dugas, F. Cooper;) and that it has been pronounced, by high authority, as one, in all cases, at once cruel and useless. (Gölis, Heister, Hecher, Portenschlag.)

6.-Chorea.

Chorea is a very common disease of childhood, occurring more frequently between the eighth and fourteenth years, than at any other period of life. It consists in involuntary convulsive movements of the voluntary muscles, particularly of the face and extremities, and, occasionally, of those of the neck and trunk. In some cases, nearly the whole of the voluntary muscles, are more or less affected with convulsive or irregular movements; while in others, these are confined to one side, to the face and neck, or to a single extremity. The distinguishing characteristic of the disease, is an incomplete subserviency of the muscles of voluntary motion to the will, by which their actions are rendered irregular and uncertain. Thus, the patient, intending to approach a cup of water to his lips, will involuntarily cast it from him, or throw its contents over his shoulder; or, in attempting to

advance his foot forward, in the act of walking, carries it in every possible direction, excepting the right one. The movements of the face, arms, and hands, often resemble the gesticulations of buffoonery.

The name of the disease, (Chorea Santi Viti—the Dance of Saint Vitus,) is derived from the circumstance of the patients affected with it, formerly repairing annually to the chapel of St. Vitus, near the city of Ulm, in Swabia, where they danced day and night, as a means of

effecting their cure. (Horstius.)

Chorea affects children of both sexes, but more frequently girls, particularly children of a weakly constitution, or whose health and vigour have been impaired by confinement, impure air, improper or deficient nutriment, or preceding disease. Previous to its occurrence, the patient is, in general, affected with the ordinary symptoms of derangement of the digestive organs,—a depraved, variable, or defective appetite, tumid abdomen, constipated bowels, and a loss of his previous vivacity and playfulness. (Hamilton.) The attack in general, commences with slight, irregular, involuntary movements of different muscles, particularly those of the face, which are often mistaken for voluntary grimaces; these, after a shorter or longer period, are succeeded by the more constant and general inovements, by which the disease is characterized. Any one set, or all of the muscles of voluntary motion, may be affected, in different cases. Usually, the first indications of the disease, are, an unsteadiness in the patient's gait, which is marked, often, by a peculiar jumping or starting; or one leg is dragged along, in place of being lifted in the usual manner; while the arms are moved about, as if the patient were performing various intentional gesticulations. He is often unable to perform the common and necessary movements with the affected arm, the involuntary actions of the muscles, entirely counteracting those directed by the will. These convulsive movements are more or less violent, and are often constant while the patient is awake; -during sleep, in most cases, they cease entirely. Although, occasionally, different muscles become successively affected, (Hamilton,) in the generality of cases, it is in those first attacked, that the convulsive movements remain throughout the disease. In consequence of the affection of the muscles of the tongue and throat, in some instances, articulation and deglutition are impeded, or performed with difficulty. In extreme cases, the eyes lose their lustre and intelligence, the face becomes pale, and the expression of the countenance is that of vacancy, indifference, and langour. The mouth is often distorted, so as to give to the face the appearance of a habitual, silly grin. The patient acquires, in fact, the features of idiocy. It is, indeed asserted, that when the disease has continued for a length of time, partial fatuity is liable to ensue. (Hamilton.) Fatuity, however, is by no means a very common sequel of chorea, even in its most violent and chronic forms. Many instances are on record, and similar ones have fallen under our own notice, in which the disease has continued, with but slight intermissions, from childhood to an advanced age, without the integrity of the intellect being much, if at all affected. In some cases, the patients are affected with a species of melancholy, or with the peculiar nervous temperament, that commonly accompanies hysteria.

Throughout the attack, the bowels are generally costive, and the appetite defective, capricious, or ravenous. Febrile reaction is not necessarily an attendant upon chorea, and when it does occur, is generally the result of gastro-intestinal irritation, or some accidental affection. When the disease is very violent and protracted, there in general occurs great emaciation, a flaccid state of the muscles, great depression of strength, paleness and discolouration of the skin, and the other indications of impaired energy of the digestive and nutritive functions. Epilepsy and hemiplegia are not uncommon results of chorea; and in many of the cases that have fallen under our notice, the patients have died from tubercular meningitis—the lungs and serous tissues of the thorax and abdomen, exhibiting, also, tubercular

depositions.

Chorea has been defined by some writers, to be an irregular motion of the muscles, when excited into action by the will, and hence, that the disease consists in a loss of the power of volition over their mode of action—that is, of directing and combining their action, for the accomplishment of any particular movement. The disease has, consequently, been supposed to result from some lesion of the cerebellum. (Carpenter.) This definition would, however, exclude a number of cases, in which the convulsive movements of the muscles certainly occur, independently of the will, and unassociated with consciousness, differing from convulsions only in the orderly nature of the motions. (T. Thompson.) Such are cases of malleation, (Morgagni.) in which the convulsive paroxysm consists, principally, in a constant striking the knees with one or both hands, as with a hammer—of rotation of the whole, or a part of the body, as in the case described in an early volume of the Medico-Chirurgical Transactions, in which the patient, a girl ten years of age, was seized with an irresistible propensity to turn round on her feet like a top, then to lie down, and roll rapidly backwards and forwards; in a more advanced stage of her disease, while lying upon her back, to bend herself up like a bow, by drawing her head and heels together, and then suddenly to separate them, so as to cause the buttocks to fall with considerable force upon the bed; and to repeat this continually, for hours; at a still later period, she was seized with a propensity to stand upon her head, with her feet perpendicularly upwards: as soon as her feet gained the perpendicular, all muscular action ceased, and her body fell as if dead, her knees first striking the bed, and her buttocks striking her heels; this was no sooner done, than she instantly mounted up as before, and continued these evolutions, sometimes for fifteen hours consecutively, at the rate of from twelve to fifteen times in the minute. (Watt.) To this same class belongs also the salaam convulsions, noticed in a previous section. But it would be impossible to describe all the various forms under which the disease occasionally presents itself; in many

of which, no description can convey an adequate idea of the odd appearance, and strange gesticulations of the patients; so that we need not be the least surprized, that in times of ignorance and superstition, it was ascribed to supernatural causes, and the agency of demons. (White.) It is more than probable, that many cases of stammering are to be regarded as a species of chorea of the muscles of the voice. (Carpenter.)

The disease, as it ordinarily presents itself in children, will be

readily recognised by the symptoms already laid down.

It ordinarily occurs, as already remarked, between the eighth and fourteenth years, but is by no means confined to this period. The convulsive actions may be continuous, intermittent, or remittent; they are excited and increased by observation, contradiction, ridicule, or any other cause of irritation, and especially, by any attempt, forci-

bly, to restrain them. (Thomson.)

Chorea is of itself seldom fatal; it frequently terminates spontaneously, about the period of puberty in boys, or upon the establishment of the catamenia, in girls. When recent, and occurring in children possessed of some degree of constitutional vigour, it may often be entirely removed by an appropriate treatment; though not unfrequently, the patient preserves, during life, a tendency to involuntary twitching of the muscles of the eye, eyelids, face, and even of the limbs.

Pathological anatomy throws but little light upon the true nature of chorea, so far, at least, as regards the species and seat of the lesion of the nervous centres upon which the phenomena of the disease immediately depend. In a large number of cases, no morbid changes are detected, that can be regarded as necessarily connected with the disease, after the most minute examination; (Dugès, Oliver, Hawkins, Rufz, Gerhard, Hache, Vielde, Rostan, Lawrence;) while those which have been recorded by various writers, are evidently accidental lesions, unconnected with the disease; or they are to be regarded rather as effects than causes of the complaint; these are, inflammation of various parts of the brain; (Clutterbuck, Serres;) turgescence of its vessels, with effusion of serum; (Coxe, Patterson, Röser, Willan, Copland;) hypertrophy and injection of the brain and spinal cord; (Monad, Hutin;) turgescence of the vessels of the brain and spinal cord, with several bony plates upon the pia mater, half-way up the spine; (Bright;) a concretion in the medullary substance of the left hemisphere of the brain; (Brown;) a tumor pressing on the corpora quadrigemina, inflammation of these parts, and sanguineous effusion; (Serres;) ecchymosis of the membranes, with a pulpy condition of the spinal cord; (Keir;) and, in a single case, an abscess within the cerebellum. (Schröde.)

In the absence of positive facts, speculations upon the nature of any disease, are of little value. Reasoning from the nature of the phenomena by which the disease is characterised, chorea has been referred to lesions of the spinal system of nerves; (M. Hall;) but this, it has

been very properly remarked, can scarcely be regarded as a correct conclusion. (Carpenter.) Although there is often considerable irregularity in the ordinary reflex actions; yet the disease mainly consists in an absence, or deficiency of the controlling power of the will over the actions of the muscles of animal life; and in many cases, in a spontaniety of action in the performance of certain movements. According to the most probable view of the functions of the cerebellum, it is probable that this organ is the chief seat of the disease. The morbid phenomena, however, in the majority of cases, not resulting from any direct lesion of this portion of the brain, but from remote

irritations, in which it participates sympathetically.

The most common predisposing causes of the disease, would appear to be the period of childhood; bad nursing; impure and confined air; unnutritious or improper articles of diet, and deficient exercise; and a disordered condition of the digestive organs. The usual exciting causes, are irritations seated in the bowels or stomach; retained fæces, worms, &c., fright, violent fits of anger, injuries of the head, difficult dentition, rheumatism, improper excitement, and certain affections of the genital organs. (Stoll, Dehaen, Wendt, Bouteille, Geoffroy, Salter, Darwin, Hamilton, Bright, Andral.) It has been stated that, in some cases, a predisposition to the disease may be transmitted from parent to child; (Elliotson, Coste, Constant, Bright, H. Bell, Stiebel;) and this corresponds with the result of our own experience. Like all other convulsive diseases, chorea may be excited by imitation, notwithstanding the fact has been denied by recent observers. (Rufz, Blache.)

The disease has not appeared to us to be much affected by atmospherical influences; it is said, however, to be most common in summer. (Dugès, Rufz, Spangenburg, Blache.) It appears to occur rarely in the southern hemisphere. (Rochoux, Chervin, Danste.) It

is not a very frequent disease in Philadelphia.

In the treatment of chorea, the first and most important indication, is the removal or avoidance, as far as possible, of the exciting causes. The means for effecting this, will of course, depend upon the circumstances of each case.

The remedies that have the greatest amount of evidence in their favour for the removal of the disease, are bleeding, active purging,

counter irritants, anti-spasmodics and tonics.

Bleeding from the arm, or from the foot, or by leeches, from the head and upper part of the spine, has received the sanction of several eminent practitioners, and cases have been published in evidence of its efficacy. (Sydenham, Bouteille, Geoffroy, Babbington, Lisfranc, Serres, Clutterbuck, Stiebel, Watt.) There will be found, we apprehend, but few cases, however, in which bleeding will be indicated. That the disease may occur under circumstances, and accompanied by symptoms, in which the detraction of blood may be demanded, we admit; thus, when it attacks children of a plethoric habit, and is attended by the indications of cerebral inflammation or hyperæmia, a

judicious and timely resort to general or local bleeding, will no doubt, be productive of immediate benefit, and prepare the system for the action of other remedies. Such cases, however, are of rare occurrence.

Purgatives are a remedy of much less doubtful propriety; as a valuable adjuvant to the other means employed, there are few cases in which they will not be indicated, while in those connected with a torpid and loaded condition of the bowels, they will, invariably, produce a decided alleviation, and in many, an entire removal of the symp-From the time of Sydenham, there are few writers on the disease, by whom their employment is not strongly insisted on, while, by a few, they are considered as almost the only remedy. (Stoll, Stark, Hamilton, Parr.) In the early period of the attack, and in light cases, any of the purgatives which have the effect of unloading the bowels, without producing much irritation or occasioning watery stools, will be proper. In the more advanced periods of the disease, and in the more severe cases, the bowels are very apt to be affected with a very considerable degree of torpor, and for their evacuation, will demand the more active purgatives, given in successive doses, in such a manner, as to produce a full and continued operation. Not only, however, is it necessary in these cases, effectually to unload the bowels, but by a judicious use of purgatives, to maintain their regular action; not a day should be allowed to pass, without one or two full evacuations being obtained. The choice of the purgative is a matter of little importance, so that, while it excites a full and brisk action of the intestines, it produces little irritation or watery purging. In the early stages and ordinary forms of the disease, calomel with rhubarb or jalap, followed by castor oil, or infusion of senna, with the addition of any of the neutral salts will answer; but where these are not found sufficiently active, the croton oil, or combinations of aloes, scammony, colocynth, gamboge and blue mass, may be employed. A very certain and effectual purgative, in cases of chorea, is the spirits of turpentine, either alone, or combined with castor oil. (Powell, Graves, Copland, Watson.) We have employed it pretty extensively, preceding its use by a full dose of calomel, and in very few instances, without decided advantage.

*R.—Ol. ricini,
Spir. terebenth. aa 3ss.—M.

It may be given in doses of a tea or dessert spoonful, according to the age of the patient, and repeated three times a day, or oftener.

Or, R.—Ol. ricini,
Spir. terebenth. aa Jss.
Tinc. sennæ, Jij.
Syrup. zingib. Jij.—M.
The dose the same as above.

In conjunction with active purging, the use of tartarized antimony has been suggested, in as large doses as the stomach will bear, without exciting vomiting, which is carefully to be avoided. (*Breschet.*) By others, emetics repeated every other day, for a period longer or shorter, according to the violence and obstinacy of the case, have been strongly recommended. (*Cheyne, Geoffroy*, the elder, *White, Town*-

send.) We have no experience as to the efficacy of either plan of treatment, but can easily conceive that cases may occur, where the disease is either produced or aggravated by an overloaded state of the stomach, or the presence of some irritating matter in that organ, in which great benefit may result from emetics. They can scarcely be considered, however, as a remedy generally applicable to chorea.

Counter irritants have been extensively employed in the treatment of the disease, and doubtless in many cases, their effects will be found decidedly beneficial. Blisters along the spine, are recommended by some; (Stiebel, Chisholm;) but friction with the tartar emetic ointment, appears to be better adapted to produce a counter-irritant effect in cases of chorea. It is more prompt in its effects and more easily managed than blisters, and is, perhaps even more efficacious. (R. Hunter, Wharton.) Pustulation with the croton oil along the spine, has, also, been recommended, as a valuable remedy in chronic cases.

In the treatment of chorea, nearly the whole list of tonics have been prescribed, and for the superior efficacy of each article, the highest authorities may be cited. Bark, and the salts of quinia, may be taken, however, as the representation of the vegetable tonics, while in regard to the mineral articles, the sesqui-oxide and sulphate of iron. sulphate of copper, oxide and sulphate of zinc, nitrate of silver, and arsenite of potassa, have, in different hands, been all found eminently successful. The testimonies in favour of the sesqui-oxide or proto-carbonate of iron in large doses, and of sulphate of zinc, are perhaps the strongest. (Mead, Vanderburg, Elliottson, Babington, Powell, Cramp-The cyanuret of iron, in the dose of three grains, three times a day, in the form of a pill, has also been strongly recommended. (Zollickoffer.) The cyanuret of zinc, in the dose of one third of a grain, twice a day, gradually increased to fourteen grains in the twenty-four hours, has recently been highly spoken of by the physicians of Berlin and elsewhere. (Müller, Günther, Pole.) There is a very great difficulty in pointing out the particular cases to which the one or other of these remedies is the best adapted. Perhaps the safest rule is to make trial of one, and if it does not succeed, after it has been continued for a reasonable time, to suspend its use, and substitute another. To derive any good from the employment of either of them, will, in general, require a perseverance in its use for some length of time. With the exception of the arsenite of potassa, to be noticed hereafter, the sesqui-oxide of iron, the oxide of zinc, and nitrate of silver, in combination with some one of the vegitable tonics, and occasionally, a narcotic, are the articles, which in our hands, have succeeded the most promptly and generally, in the removal of the disease; we have, nevertheless, found many cases to occur, in which the use of one, and then another, has appeared to be unproductive of the slightest effect, when, on substituting a third, the morbid phenomena have been very quickly, and permanently controlled.

It is stated by a high authority, (Babington,) that the sulphate of

zinc has seldom failed in his hands, in curing the disease. He found it necessary to administer much larger doses, however, than are usually given; good effects being seldom perceptible, until twelve or fifteen grains are taken three times a day. By gradually increasing the quantity, a single grain at a time, even much larger doses may, generally, be given, without exciting sickness, and with the best effect. Sulphate of zinc, however, will not be borne by all stomachs, even in small doses; and even the other mineral tonics can with difficulty be prescribed in the cases of children in doses sufficiently large, or be continued long enough to derive from them, in this disease, a decided remedial effect. In such cases, the liquor potassæ arsenitis, in doses of three drops, gradually augmented to twelve, fifteen or twenty, two or three times a day, according to the age and strength of the patient, and other concomitant circumstances, may be prescribed; it is certainly one of the most powerful remedies we possess, in cases of chorea: and when cautiously employed, desisting from its use the moment that any sickness or griping pains, or intumescence of the face or extremities are found to result from it, we have found it a perfectly safe and manageable article. testimonies in favour of its efficacy are numerous and positive. (Salters, Heming, M. Hall, Babington, Reese of N. Y., Dunglison.)

Recently very respectable and decided testimony has been presented in favour of the efficacy of the cimicifuga, in cases of chorea. (Young, of Pennsylvania, Lindsly, of Washington, Hildbreth, of Ohio, Kirkbride, of Philadelphia, Beadle, of New York, Professor Wood.) It may be given in the dose of half a teaspoonful of the powdered root three times a day; or from one to two drachms of the satu-

rated tincture, or a wine-glassful of the decoction.

Iodine has likewise been employed, and it is said with advantage.

(Peltz, Gibney, Bardsley.)

Nearly all the narcotics have been recommended by different writers, and for the relief of certain symptoms, their use would appear to be occasionally beneficial. Opium was employed by Sydenham, after bleeding and purging, as an anodyne at bed-time, and Cullen declares, from a good deal of experience, that opiates are very generally successful in the cure of chorea; opium, in the hands of other physicians has, however, entirely failed in producing any decided relief; we cannot say that we have ever known it to produce any good effect, in cases occurring in children. Camphor has been found beneficial in some cases, in combination with tonics and the cold bath. (Wilson, Richter, Poissonnier.) We have occasionally employed it, in combination with the proto-carbonate of iron, and extract of gentian, with unquestionable advantage. The belladona, stramonium, and hyosciamus, are all highly extolled, especially by the German writers. The latter we have employed very extensively, as well in combination with purgatives, as with the metallic salts; it is certainly, in most cases, a very valuable adjuvant. Graves employed it, in one case, with the best effect. The stryclinia (Romberg,) the veratria, (Ebers,) and the hydrocyanic acid, (Stuart,) have all been employed; of their value we know nothing, from our own experience.

In favour of the effects of assafætida in large doses, we have very

strong testimony. (Vautier, Jadelot, Gendron, Powel.)

In conjunction with the foregoing remedies, the cold bath, especially in the form of douche, will be found an important auxiliary. Cases are recorded, in which it was evidently productive of very great advantage. (Crampton, Stiebel, Dupuytren, Rufz.) Stiebel directs the douche to be applied to the spine. Where too severe a shock is produced by the cold douche, the tepid or warm douche, or simple tepid bathing, may be substituted. We have seen the best effects produced, by daily sponging the entire surface with salt water, at first warm, and gradually reduced in temperature, until it can be used perfectly cold. The whole surface of the body being submitted, immediately after the sponging, to brisk friction with flannel or a flesh brush.

Sulphurous baths, made by dissolving about four ounces of the sulphuret of potassa in about twelve bucketsful of water, and repeated daily, have been employed with very decided success.

(Baudelocque, Rufz, Gerhard.)

A number of cases are cited, in which the entire and permanent cure of chorea is referred to electricity. (Dehaen, Underwood, Fothergill, Gordon, Baumes, Addison, Bird.) Its success in numerous instances, appears now to be very well established. In the hands of Dr. Bird, it is said to have cured twenty-nine out of thirty-six, and to have produced relief in five of the remaining cases; in one no benefit was experienced, and one patient left, alarmed by the remedy. In the majority of instances, nothing else was prescribed, excepting oecasional mild cathartics; which, in conjunction with other remedies, had been used previously without advantage. The electricity was applied in the form of sparks, taken in the course of the spinal column, every other day, for about five minutes each time, or until an eruption appeared, which is often caused by electricity, applied in this manner. From the transmission of electric shocks along the affected limbs, no good whatever resulted, but on the contrary, the involuntary movements were, in every instance, increased, often to an alarming extent; and if employed after the patient was convalescent, they invariably aggravated every symptom, and frequently rendered the disease as severe as when the patient was first placed under treatment.

During the whole course of the disease, the diet should be light and easy of digestion; in cases attended with hyperæmia, or evidences of cerebral excitement, it should, of course, be very moderate in quantity, and consist chiefly of simple farinaceous articles; but in those cases in which tonics are indicated, it should be nourishing and more liberally supplied. Daily exercise in the open air, whenever it can be taken, is all important to the success of the cure; a properly regu-

lated course of gymnastic exercises, it is reasonable to suppose may aid the success of whatever remedies are employed, independently of their invigorating influence, by engaging the attention of the patient, and teaching, as it were, the muscles to obey the direction of the will, and to combine properly their actions. A country residence is to be preferred to one in a large city; and it would be still better, if, with the advantages of country air, the patient could command those of sea bathing. The utmost caution must be observed, as well during the disease, as for some considerable time subsequent to recovery, to guard the patient against the occurrence of any of its exciting causes, whether of a mental or physical character. If the attack occur during the period of dentition, a close attention should be paid to the condition of the gums, and irritation from this source counteracted by repeated scarification.

It is hardly necessary to say, that any disease with which the attack of chorea may be complicated, is to be treated by its appropriate remedies, and that the remedial management of the case must

be modified accordingly.

SECTION IV.

DISEASES OF THE SKIN.

CHAPTER I.

ERUPTIVE FEVERS-EXANTHEMATA.

1.-Measles.

(RUBEOLA - MORBILLI.)

The eruptive or exanthematous fevers, are characterized by a febrile excitement, succeeded or accompanied by a specific cruption upon the skin; which, in the majority of instances, appears, in each disease, constantly at a stated period, and runs a regular and definite course. The most prominent of these diseases, the measles, scarlet fever, chicken-pox, and small-pox, are manifestly capable of being propagated by contagion; and the individual in whom any one of them has occurred, is, as a general rule, ever afterwards sheltered from its

recurrence, though he still remains equally liable to be attacked by all the other affections of the class. The only exception we know of to this rule, is the well established fact, that the vaccine disease constitutes a prevention to the occurrence of small-pox; though; if the identity of the two latter affections shall be established, as there is every reason to believe it will be, if it has not already, even this will, in fact, form no exception.

Measles, strictly speaking, is a catarrhal fever, attended with a specific eruption upon the skin. It is, for the most part, a disease confined to childhood; though adults, who have passed through that period, without being attacked, are by no means exempted from its occur-

rence.

The disease is ushered in by the usual febrile symptoms; languor, shivering, succeeded by increased heat of the skin, thirst, loss of appetite, &c.; to which, about the third or fourth day, are added all the usual phenomena of ordinary catarrh:—tenderness, injection and watering of the eyes, with a slight turgescence of the eyelids; the discharge of a serous fluid from the nostrils; frequent sneezing; some degree of hoarseness, with a sense of roughness or slight soreness of the fauces; a harsh, dry cough, and some difficulty of respiration. The head is affected with pain, or a sense of stupor or drowsiness; the bowels are generally costive, and the stomach not unfrequently rejects its contents. About the fourth day, an eruption makes its appearance; first about the forehead and chin, and then spreading over the rest of the face. On the succeeding morning it is visible, also, on the neck and breast, and by the evening has spread over the trunk, and finally over the extremities. The eruption on the face is most vivid generally about the fifth day, and on the sixth begins to fade. By the seventh day the eruption on the body, which is at its height on the sixth, begins to subside; while that on the backs of the hands, which was the latest in appearing, is likewise the latest in subsiding, seldom beginning to fade before the eighth day. By the ninth day, all that usually remains of the eruption on any part of the body, is a slight discolouration of the surface; which commonly disappears before the end of the tenth day, by which period, desquamation of the cuticle over the whole body is completed.

The desquamation is in the form of minute scales; it generally commences about the tenth day, and is usually attended with a

troublesome itching of the skin.

The eruption is not confined to the skin, but extends also to the mucous membrane; the fauces and mouth being covered at the height of the disease, with reddish, slightly elevated spots; which are often strikingly visible upon the surface of the tongue. (Frank.)

Upon the declension of the eruption, a diarrhea in general occurs, if it has not, at an earlier period; and often appears to afford relief to the remaining symptoms. Occasionally a copious diarrhea comes on, immediately preceding the appearance of the eruption, and is then generally an unfavourable symptom.

With the appearance of the eruption, most commonly, there is an increase of the cough and pain of the head, while the difficulty of respiration, injection and suffusion of the eyes, and other accessory symptoms, remain without abatement until the eruption has finished its course. In many cases, however, particularly from incautious exposure to cold or damp, or a strong predisposition in the patient to pulmonary disease, the catarrhal symptoms continue without abatement, after the subsidence of the cruption; or symptoms of violent pneumonia ensue, while in other cases, symptoms of tubercular phthisis are rapidly developed. Croup has likewise been known to be an occasional result of measles; and in children of a scrophulous habit, chronic inflammation of the deep-scated structure of the ear; and of the eyes and edges of the eyelids, and painful swellings of the lymphatic glands, occasionally terminating in suppuration, followed by tedious and extensive ulceration. Meningitis, either acute or sub-acute, may supervene in cases of measles; and the disease is liable to be succeeded by gangrenous stomatitis, and in girls, by a peculiar ulceration of the pudendum. (Watson, Ferriar, Mackintosh, Dunglison.)

As the diagnosis in measles depends pretty much upon the character of the eruption upon the skin, a close attention to its form and general appearance is of some importance. The eruption usually shows itself first in the form of distinct, red, and nearly circular spots, resembling in their general appearance, very nearly, the areola of ordinary flea bites, though probably not quite so large. As these spots increase in number, they coalesce, forming small, irregular patches, approaching the nearest in shape to semicircles or crescents; these patches are intermixed with the single circular spots, and separated by interstices in which the skin retains its natural hue. On the face especially, they are slightly raised above the surface of the cuticle, so as to give a feeling of roughness or inequality of surface to the finger, when passed over the skin. The whole face is often sensibly swelled at the height of the eruption; (Bateman;) and occasionally, in violent cases, the tumefaction of the eyelids is so great as to close the eyes for a day or two. In many cases, miliary vesicles appear upon the neck, breast, and arms, during the height of the eruption; while papulæ occasionally occur on the wrists, hands, and fingers. (Willan.)

The febrile excitement in cases of measles, is, in general, of a very marked character, attended with a hot and dry skin, considerable thirst, and a quick, frequent, and hard pulse; the evening exacerbations being often marked, in severe cases, with slight delirium.

By several writers, a variety of measles is described, in which there is an absence of fever, catarrh, opthalmia, &c., and which leaves behind it a susceptibility to the future occurrence of the genuine or febrile variety. (Vogel, Stanbach, Metyger.) This is the false measles of most German writers, the rubeola sine catarrho of some, (Willan,) and the rubeola sine febre of others. An interval of many

months, even two years, may elapse between the occurrence of this and the subsequent febrile rubeola; but the latter more frequently occurs about three or four days after the non-febrile eruption. (Bateman.) Many of the cases described as false or non-febrile measles,

were, we suspect, cases of roseola.

According to the observations of a few physicians, a rubeolous fever may occur unattended by any cutaneous cruption. (Dehaen, Morton, Richter, Consbruck, Vogel.) In other words, during the prevalence of epidemic measles, some patients are affected with catarrhal fever, without measles, and if the observations of Ritcher are to be depended upon, such patients are usually exempted from an attack of measles, during the subsequent continuance of the epidemic; but we have no evidence that they are less liable than the unprotected, to the occurrence of the disease subsequently.

In some cases the eruption occurs at a very early period, as upon the second day; whilst in others, the catarrhal symptoms continue for two weeks or longer, previous to the appearance of the rash. Occasionally, the eruption makes its appearance first upon the body and subsequently extends to the face; while, in a few instances, it has been entirely confined to the face and trunk throughout the attack. Cases are related in which the eruption has declined, and then suddenly reappeared with the febrile and catarrhal symptoms. (Frank,

Willan, Conolly.) Not unfrequently the eruption is preceded by coma, or by partial or general convulsions.

The autopsical appearances will vary, of course, according to the period when death has taken place, and the nature of the concomitant disease, by which the fatal event has been produced. Measles in its simple form, uncomplicated with severe pulmonary, gastrointestinal, or cerebral disease, is seldom, of itself, the cause of death; and although the symptoms, during life, indicate more or less bronchial affection, the exact nature and extent of this, it is impossible to determine with any degree of certainty. The mucous membrane of the trachea, esophagus, and the surfaces of the abdominal viscera generally, have been said to present, when the case has terminated fatally during the eruptive stage, the same species of exantheme as the skin. (Lieutaud.) In some cases, effusion of lymph mixed with blood or pus, has been found in the cavity of the thorax; (Willan, Boudin;) in others, inflammation of the substance of the lungs, with extensive effusion in their texture; (Williams;) in others, extensive bronchial or pneumonic inflammation; (Rayer, Boudin;) and in others, condensation of the pulmonary tissue, as in cases of pneumonia. (Montgomery, Boudin.) The morbid appearances present, in the cases examined by ourselves, were, the various lesions observable in severe cases of bronchitis, lobar and lobular pneumonia; ædema of the lungs, extensive engorgement of their blood vessels with effusion of bloody serum in the air cells and minute bronchial ramifications; tuberculation of the lungs, and of the serous membranes generally; gastro-enteric inflammation; follicular inflammation; occasionally ulceration of the ilcum and colon, enlargement of the mesenteric glands, and meningeal inflammation, particularly of the basis of the brain, with tubercular deposition and effusion within the ventricles and arachnoid cavity. There was no case in which some degree of bronchial or pulmonary disease did not exist; in a very large number there also existed indications of more or less disease of the gastro-intestinal mucous membrane; the indications of cerebral disease were the least frequent.

The most frequent forms under which the measles presents itself, are the simple catarrhal, which we have described—the congestive

and the gastro-intestinal.

The congestive form of the disease is marked by imperfect reaction, and occasionally its entire absence; a general depression of the energies of the system; pallor of the face; a sunk and anxious expression of the countenance; torpidity of the bowels; a slow, weak, oppressed pulse; slow and oppressed respiration, and coldness of the extremities. The eruption may not appear, or it occurs slowly on some portions of the surface only. If reaction does not take place spontaneously, or is not induced by an appropriate treatment, stupor or deep coma, and occasionally, convulsions, ensue. In some cases, symptoms of congestion ensue after the eruption has made its appearance; in these cases, the latter either becomes of a pallid or livid hue, or entirely disappears. In those instances in which an autopsic examination has been made, extensive engorgement of the pulmonary vessels, and, generally, of the vessels of the brain also, were detected.

The congestive form of measles is said to occur most commonly in infants, and in children of a feeble and relaxed habit; we have not, however, found it to be confined to any particular age or constitution; in some epidemics it occurs much more frequently than in others; we have met with it more often, however, in confined and unhealthy neighbourhoods, than in those of an opposite description.

When measles is complicated with gastro-intestinal disease, it is ordinarily accompanied by a less decided febrile reaction, a small and feeble, though generally frequent pulse, and considerable pain of the forehead. A sense of tension and fullness is usually experienced at the epigastrium, which is more or less tender upon pressure. Vomiting and profuse diarrhea often precede or follow the appearance of the eruption, which is pale, and often indistinct. The skin is dry and harsh, but seldom much increased in temperature. The tongue is dry and brown, and often the patient complains of frequent sharp pains in the abdomen. There is considerable thirst, and occasionally great restlessness, dyspnæa, and an anxious expression of countenance; particularly on assuming an erect posture. The cough is short, dry, and almost incessant. In some cases, particularly in young and irritable children, great difficulty of respiration, and a sense of oppression in the chest, will suddenly ensue. The patient may sink under the ordinary symptoms of fatal gastro-intestinal disease, or of pulmonary inflammation, or symptoms of cerebral inflammation may ensue quickly, terminating in coma, convulsions, and death.

In its simple, uncomplicated form, the measles is ordinarily a disease attended with very little danger; and so mild in its symptoms, as to run its course and terminate favourably, without the necessity of any very active interference on the part of the practitioner. For although in every case it is requisite to employ a precautionary treatment, that the occurrence of violent or unfavourable symptoms may be prevented, yet, as a general rule, active remedies will neither be necessary nor proper. When, however, the disease becomes complicated with severe affections of the respiratory organs, alimentary canal, or brain, it is invariably attended with considerable danger, and will often prove fatal, even under the most prompt, judicious, and energetic course of treatment; while its occurrence, under all circumstances, in children of a feeble and debilitated constitution, or who, from any cause, are strongly predisposed to disease of the lungs or brain, is to be viewed in an unfavourable light, as in such, it is very apt to prove the exciting cause of some of the most unmanageable and fatal maladies to which the infant constitution is liable.

As a general rule, an individual who has suffered an attack of measles, is not subsequently liable to reinfection; a few cases, however, in which a second attack has occurred, have been noticed. (F. Home, Baillie, Marley, Rayer, Webster, Wolff, Moore.) Several of

these have fallen under our own notice.

Measles usually occurs as an epidemic, often of very considerable extent. Of the particular state or condition of the atmosphere, upon which the production of the disease depends, we know nothing. Epidemics of measles are said to commence, generally, in the month of January, and to cease soon after the summer solstice. (Sydenham.) According to our observations, they are very apt to occur at the same seasons, and under nearly the same sensible conditions of the atmosphere, as epidemic catarrh. Sporadic cases of the disease may occur in almost every month of the year:—they have occurred in the midst

of summer. (Morton.)

Whether measles is capable of being propagated by contagion, is still a disputed question; although the affirmative is generally assumed, there are many who maintain the negative. The disease, it is said, occurs always as an epidemic; that on its first appearance, a number of individuals are invariably simultaneously affected; while the disease cannot be traced from house to house, or from street to street, as in small pox and scarlatina. (Dewees, Wolff.) There can be no doubt, however, that measles may be communicated by innoculation. (Home, Horst, Speranza, Vogel, Brown, Rosen, Vaidy.) Dr. Home, for this purpose, drew blood from a cutaneous vein, where the eruption was most confluent, and applied a dossil of lint impregnated with this, to a wound made in the arm of the individual to whom the infection was intended to be communicated. Of the general certainty and

value of the operation, it is impossible to form any positive conclu-

sions, from the few instances in which it has been practised.

Although no age is absolutely exempt from an attack of measles, the most common period of its occurrence is from that of weaning, to the age of puberty; after which latter period, the older the patient, the more troublesome and dangerous it is generally said the disease proves. A late writer, however, (Montgomery,) dissents from this doctrine, and states, that from his own observations, he should pronounce a directly opposite opinion; which corresponds

precisely with our own experience.

The only disease with which there is any risk of confounding measles, is scarlatina; from which, however, it may be very readily distinguished by the following circumstances.—The distinctly marked catarrhal symptoms by which the cruption in measles is preceded and accompanied, and their absence in scarlatina; the appearance of the cruption of measles, being seldom very evident until the fourth day; whereas that of scarlatina usually appears on the second day of the fever. In measles, the colour of the cruption is dark scarlet, or of a raspberry hue; while in scarlatina it is of a vivid red, resembling the hue of the lobster after boiling; the cruption in the latter is also much more full and extended than in the former, forming large irregular patches, which often coalesce, so as to communicate a uniform redness over a considerable extent of surface.

In the treatment of an ordinary simple case of measles, the attention of the practitioner should be chiefly directed to the fever and catarrhal symptoms, which, when mild, the cruption at the same time following a regular course, will demand little else than a cautious attention to preserve the body of the patient of an equable temperature, and to prevent exposure to cold or damp; to place him upon a spare, simple and unirritating diet, and to keep his bowels regular, by the occasional use of mild purgatives; while we endeavour to mitigate his cough by plain demulcient drinks, rendered more palatable by the addition of a small portion of some vegetable acid, as lemon juice, or the like.

The patient should be kept at rest, and in a large, well ventilated apartment, of a suitable temperature, and free from currents of cold air. His drinks should be taken rather of tepid warmth than cold. When the cough is troublesome, the inhalation of the steam of warm water, will, in many cases, if the patient is sufficiently old to conduct the inhalation properly, prove an excellent palliative. In some cases, a pediluvium at bed time, followed by a dose of Dover's powder, will cause the patient to sleep, and mitigate the more troublesome catarrhal symptoms.

We are persuaded that in all cases, an emetic of ipecacuanha or tartarized antimony, administered in the early period of the attack, and followed by a full dose of calomel combined with magnesia, the operation of the calomel being promoted by a dose of castor oil given a few hours subsequently, will be found beneficial, by rendering

the course of the disease milder, and the occurrence of severe bronchial or pulmonary inflammation less frequent. It is a practice we have followed for many years, and invariably with the best effects. When the febrile excitement is considerable, with a good deal of dryness and heat of the skin, the employment of antimonials, or the milder diaphoretics is demanded; when the catarrhal symptoms are very severe, the same remedies will be necessary as in severe cases of ordinary catarrh.

*R.—Mucilag. g. acaciæ, Ziij.

Syrup. limonis, Zj.

Spir. æth. nitr.

Spir. æth. nitr.

Spir. æth. nitr.

Spir. æth. nitr.

Vini antimonii, aa Ziij.

Tart. antimon. gr. j.—M.

Dose, a tea spoonful every three hours.

Or R.—Ammoniæ hydrochlor.

Or R.—Ammoniæ hydrochlor.

Pulv. ext. glycyrrh. aa Tiij. Tart. antimon. gr. j. Aquæ, Tviij.

Dose, a tea spoonful every three hours, for a child under two years of age, and a dessert spoonful every two or three hours, for one over two years of age.

In regard to the employment of bloodletting in severe cases of measles, there appears to be very little difference of opinion; most practitioners concurring in its recommendation. Some difference of sentiment has, however, existed as to the most appropriate period for its employment. Some directing it only during the height of the the eruption; others postponing it until the eruption has subsided; while others again consider it equally proper at any period of the disease, when symptoms are present which call for its use. The proper rule, however, is easily laid down; whenever great shortness or difficulty of respiration; a full, hard and quick pulse, great heat and dryness of the surface; a frequent dry harrassing cough, with severe pain in the chest or head; and, more particularly, if these be accompanied with the physical signs of extensive bronchial or of pulmonary inflammation—the abstraction of blood, to an extent sufficient to relieve these symptoms, will be proper and necessary at any stage of the disease; but, more particularly, if the above symptoms supervene at the period when the eruption disappears. Of course, in directing the extent and repetition of the bleeding, due attention must be paid to the age and vigour of the patient. Under the circumstances just recited, general bleeding, cups to the chest, antimonials and blistersin fact, all the remedies demanded in ordinary cases of severe bronchial and pucumonic inflammation, will be necessary; and upon their prompt and judicious employment, will the safety of the patient, in a great measure, depend.

Exposure to cold air, or even the use of the cold effusion, which has been found so beneficial in scarlatina, and other of the exanthemata, has likewise been recommended in measles. (Magrath, Bateman.) In the latter disease, however, it is a remedy of, to say the least, very doubtful propriety. It certainly appears to us, calculated rather to augment the catarrhal and pulmonary affections, which, in

the great majority of cases, are unquestionably the most serious features of the disease.

In the congestive form of measles, the remedies best adapted to promote reaction, and to relieve the oppressed state of the internal organs, are, 1st, Emetics, the action of which have been found among the very best means of favouring the eruption upon the surface, and unloading the engorged vessels of the lungs. (Rush, Armstrong.) 2d, The warm bath. Immersion in the bath should succeed the operation of the emetic, and be followed by brisk friction over the whole surface, with the hand or a soft flannel. 3d, Blisters or sinapisms to the extremities, and to different parts of the surface, particularly the neighbourhood of the organs which appear to be the most oppressed. There are few of the more violent cases, in which these remedies will not be found of decided advantage. In their application in young children, and in debilitated subjects, caution should be observed not to allow them, particularly the blisters, to remain on too long, but to remove them in one or two hours, the sinapisms in a much shorter period, and to substitute large emollient cataplasms. 4th, Diaphoretics. The particular diaphoretic will depend, in a great measure, on the urgency of the symptoms; in most cases, the Dover's powder, a combination of camphor, ipecacuanha, and extract of hyosciamus, or of the acetate of ammonia, aqua camphorata, wine of ipecacuanha, and tincture of hyosciamus, b will be proper; the patient, at the same time, drinking freely of some tepid fluid. 5th, Bleeding. In a large number of the congestive cases of measles, a cautious abstraction of blood, either from the arm, or by cups, from about the head and chest, particularly after the operation of an emetic, and the warm bath, will often produce very decided relief. The effects of the bleeding, however, should be carefully watched; and the quantity of blood abstracted, or the necessity for the immediate cessation of the bleeding, should be governed by the degree of relief obtained, and the effects upon the pulse. If the symptoms of oppression are evidently diminished, and the pulse becomes fuller and more free under the bleeding, it may be continued, within moderate limits; but if the oppression is augmented, the exhaustion of the patient increased, or the pulse sinks, these are signals for the immediate suspension of the operation, and the administration of some gentle stimulant, of which the best is, perhaps, the carbonate of ammonia, in combination with camphor.

^aR.—Pulv. camphor. gr. iv.—vj. Magnes. calc. Əijss. Pulv. ipecae. gr. iij.

Pulv. specac. gr. nj. Ext. hyosciami, gr. vj.—viij.—M. f. ch.

No. xij.

One for a dose; to be repeated every one, two or three hours, according to circumstances.

LR.—Acctat. ammoniæ liquor. Tiij.
Aquæ camphoræ, Tij.
Vin. ipecac. Tij.
Tinct. hyosciami, Tiij.
Syrup. zingiber. Tj.—M.

A tea spoonful for a dose; to be repeated every one, two or three hours, according to circumstances.

When, in the course of the disease, the eruption suddenly recedes, or becomes of a pale or livid hue, and symptoms of severe oppression of the internal viscera occur, nearly the same remedies will be demanded.

Bleeding will, in such cases, when cautiously employed, generally be found beneficial; and if a state of deep coma ensue, cups to the head, sinapised pediluvia, followed by sinapisms or blisters to the

extremities should not be neglected.

In regard to the propriety of the administration of stimulants, to bring out, as it is termed, the eruption, some degree of caution is invariably to be observed. That there may occur cases in which, from a deficiency of vital energy, the specific action upon the surface of the body may not take place, or suddenly cease, and symptoms of a very violent character ensue, we are not inclined to deny, though such cases have never fallen under our notice. Under such circumstances, the warm bath, and a judicious use of external and internal stimulants, would unquestionably be demanded, to remove the extreme danger there exists of the patient speedily sinking. But the practitioner should be very certain that the non-appearance, or retrocession of the eruption, and the symptoms of oppression, do not depend rather upon extensive central congestion, than mere debility; recollecting that in cases of congestive measles, the administration of active stimulants internally, is, in nearly every instance, positively mischievous.

It occasionally happens that about the seventh or eighth day of the eruption, upon different parts of the body, the latter assumes suddenly a livid appearance, with an intermixture of yellow. This constitutes the *rubeola nigra*, of some writers. (Willan.) Such an occurrence has caused often much alarm, it being viewed as the indication of imminent danger; we are assured, however, that such symptoms very speedily give way, under the use of the mineral acids.

(Bateman.)

The gastro-intestinal symptoms with which measles are occasionally complicated, require to be treated on general principles. The warm bath, leeches to the epigastrium or surface of the abdomen, followed by emollient cataplasms; small doses of calomel, ipecacuanha, and extract of hyosciamus, and a properly regulated diet, are the chief remedies demanded. When a profuse serous diarrhæa occurs, this should be promptly arrested, by the administration of the acetate of lead, by the mouth or in enema. We should recollect, however, that a moderate diarrhæa is, generally speaking, rather beneficial than injurious, particularly when it occurs towards the termination of the eruption; we should, therefore, unless it be attended by prominent symptoms of gastro-intestinal disease, refrain from interfering with it, especially in robust and plethoric subjects. (Armstrong.)

During convalescence, the utmost care should be taken to guard the patient from the influence of cold and damp. Even during the warm season, he should not be allowed to go out of doors, excepting in the middle of the day, and in dry weather. His diet should be light, nourishing, and unirritating; every species of stimulating drink should be avoided. The use of the warm or tepid bath daily, will always be

advantageous.

It is said that when any cutaneous disease occurs after measles, the

internal organs are seldom liable to become affected; and that even where some internal disorder has already existed, it has disappeared on the occurrence of a spontaneous cruption upon the skin. We should, therefore, be cautious in interfering with vesicles, pustules, boils, and the like, when they occur subsequent to an attack of

measles. (Armstrong.)

Various diseases may remain or occur upon the decline of the eruption, which require great attention, as they are often exceedingly troublesome, and attended with greater danger than the original malady. They are usually bronchial or pulmonic inflammation, and, occasionally, inflammation, either acute or sub-acute, of the intestinal canal. In a large number of instances, these may be entirely preventted, or rendered more manageable when they do occur, by a proper treatment of the measles from its commencement. When they present themselves, they must be treated in accordance with their character, extent and violence, and the condition of the patient's strength.

2 .- Scarlet Fever .- Scarlatina.

In its mildest and most simple form, scarlatina is a febrile exantheme, characterized by a diffused efflorescence, of a bright scarlet colour, which appears upon the surface of the body, usually on the second day after the occurrence of the fever, and terminates in a desquamation of the cuticle, at the end of about five days. Most commonly, however, it is accompanied with a severe affection of the throat, or of one or other of the internal organs, by which its symptoms and progress are very considerably modified, and the disease, which in its regular and uncomplicated form, scarcely demands the interference of the physician, becomes one of the most unmanageable

and destructive to which children are liable.

In consequence of the various modifications under which the disease presents itself, in the same, or in different epidemics, scarlatina has been divided by practical writers into several varieties. Those most commonly recognised are, the scarlatina simplex; the scarlatina anginosa; and the scarlatina maligna. (Willan, Bateman.) The last of these denominations, is particularly objectionable. The term malignant is, to say the least of it, indefinite; while from its former, and even now very common application, it is extremely apt to lead to erroneous views, in regard to the nature and proper treatment of those affections it is employed to designate. To the above varieties, some writers add a fourth, in which, from exposure to the contagion of scarlatina, the throat alone becomes affected, without any eruption occurring upon the skin. (Willan, R. Williams, Tweedie.) This, however, cannot, with strict propriety, be considered as scarlet fever. The malignant form of scarlatina has, with an approach to greater clearness and precision, been divided into three varieties:—the highly inflammatory, the highly congestive, and the irregular congestive. (Armstrong.)

We propose to consider the disease under two divisions only:—1st, The *inflammatory*, including the simple and anginose varieties of Willan, and the highly inflammatory of Armstrong. 2d, The *congestive*.

Inflammatory Scarlatina.

To distinguish the different modifications of this form of scarlatina, and the consequent variations of treatment that is demanded, we shall describe it as it occurs:—1st, Under the form of simple excitement; 2d, Attended with inflammation of the fauces; and 3d, With inflammation of one or more of the internal organs.

The disease seldom manifests itself until from about the third to the

fifth day subsequent to exposure.

In its mildest form it is usually ushered in without much rigor, or disturbance of the stomach; but there is always present more or less pain, or uneasy sensation in the head, restlessness, and lassitude, with paleness of the face, and a weak pulse. These symptoms may continue from one to three days, when they are succeeded by a general febrile reaction. It is usually on the second day after the occurrence of the febrile excitement, that the efflorescence upon the skin begins to show itself, first about the face and neck, in innumerable red points, which, within the space of twenty-four hours, are to be seen over the whole surface of the body. As the points multiply, they coalesce into small irregular patches; and, by the third day, the eruption presents a diffuse and continuous efflorescence over the limbs and around the fingers, giving to the skin a colour somewhat similar to that of the shell of a boiled lobster. Upon the body, the efflorescence is seldom continuous, but is distributed in diffused irregular patches; the scarlet hue being most vivid about the flexures of the joints, and around the loins. The efflorescence is often accompanied with a perceptible roughness of the skin, which is most evident upon the extremities, and front of the body, giving a sensation as if the surface was covered with granules. It is caused by an enlargement of the cutaneous papillæ. Where the redness of the skin is most intense, and particularly when the patient has been subjected to a heating regimen, small miliary vesicles occasionally appear upon different parts, more generally upon the trunk. About the fourth or fifth day of the efflorescence, an eruption of semi-globular vesicles, filled with a thin pearl-coloured serum, is occasionally observed about the forehead, neck, chest, shoulders and extremities. They vary in size, and succeed one another without determinate order. (Vogel, Burserius, Sauvages, Rush, Withering, Willan.) The efflorescence is not confined to the surface, but extends over the mucous membrane of the mouth and fauces, and even of the nostrils, and is occasionally visible upon the adnata of the eyes. The papillæ of the tongue, also, are considerably elongated, and project their scarlet points through the white coat with which the surface of the tongue is covered.

On the fourth day, the eruption is usually at its height; and on the fifth, begins to decline by interstices, leaving the small patches as at first; on the sixth it is very indistinct, and is generally entirely gone before the termination of the seventh day; a desquamation of the entire cuticle taking place, which often occupies many days before it is entirely completed.

Early in the stage of excitement, there is most generally experienced some degree of soreness, or a sense of fulness in the throat,

and the voice is not quite so clear and sonorous as ordinary.

The skin, from the excessive injection of its blood vessels, becomes morbidly sensible, dry, and hot. Its temperature seldom, however, exceeds 103 degrees of Fahrenheit. The lips are of a vivid red; the face is flushed and somewhat tumid, and the tongue covered upon its centre with white mucus, but red around the edges. The pulse is, in general, increased in strength and quickness, but seldom rises above 100 or 110 in the minute. (Armstrong.) The thirst is seldom very urgent; the appetite is lost, and the bowels are costive; and when evacuations are obtained, they are frequently of a much darker hue than natural. The febrile symptoms slightly remit towards morning, but gradually increase during the course of the day, and attain their greatest intensity in the evening, when some degree of delirium is often present.

The stage of excitement seldom continues longer than four or five days, when it gradually subsides; the pulse becomes slower and softer,

and the skin cooler and more relaxed.

The foregoing description is that of the most usual form of simple scarlet fever; which seldom continues longer than fourteen days, and is occasionally of shorter duration. Its termination is very generally favourable; the first stage being attended with but a slight degree of visceral congestion, the second being marked with general, but short and moderate excitement, which is succeeded by no serious collapse. In its course, however, either suddenly or by degrees, symptoms of a more decidedly inflammatory character may become developed, and the throat being now more deeply affected, the case assumes the anginose form of scarlatina.

Scarlatina anginosa commences nearly in the same manner as the simple form. It is generally ushered in, however, by a greater degree of chilliness, head ache and restlessness. There is a sense of greater oppression at the præcordium, with prostration of the voluntary powers, nausea, retching or vomiting. The eruption upon the skin generally appears within the first three days, and about the same period, the fauces become red and swollen, and the patient complains of a stiffness in the neck and jaws, and a fullness and soreness of the throat, particularly in speaking or swallowing. The pulse is quicker than in the preceding form, there is also greater thirst, and more uneasiness of the head; the tongue is drier and redder at its edges, and the heat of the surface is more elevated, ranging from 106° to 108° or 112°. (Currie.) The discharges from the bowels are darker, and of a more

more often attended with delirium, during which the patient, if alone or in the dark, talks much to himself. The efflorescence does not pervade so generally the surface of the body, as in the simple form; but in general occurs in scattered patches on the chest and arms. In some cases, it is confined to the back of the hands and wrists, and sometimes entirely disappears on the second day, and partially reappears at uncertain periods. When the eruption is slight, or speedily disappears, it is often not succeeded by desquamation. In other instances, however, desquamation continues often to the end of the third week, or even longer; large portions of the cuticle occasionally

separating, particularly from the hands and feet.

When the febrile symptoms begin to abate within the first four or five days, the tonsils and fauces are seldom covered with exudations of lymph; there is merely an increased secretion of tenaceous mucus, some of which often adheres to the fauces; the constant efforts made by the patient to expel this, increases his sufferings. But, when there is a longer continuance, or higher grade of febrile excitement, small patches of a dark hue are observed upon the tonsils and fauccs. at which parts, there is often an exudation of lymph, of a grevish white appearance, which is often mistaken for sloughs; but by gargling the throat of the patient, the exudation may often be removed, when the mucous membrane beneath will be found entire. The exudation is renewed from time to time, and frequently extends into the lateral parts of the pharynx and esophagus, but seldom into the larynx or trachea. (Rayer, Tweedie.) As the fever declines, which is frequently about the eighth day, the patches of exudation separate, and leave the fauces somewhat redder than natural, but free from ulceration. It occasionally happens, however, that instead of so favourable a termination, symptoms of a much more alarming character arise in the progress of the disease; the patches in the throat acquire a darker colour, and the secretions from the fauces and nostrils become highly offensive and acrid; painful indurations of the glands of the neck ensue, and the patient is troubled with griping pains of the abdomen, tenesmus, or diarrhœa. In some cases, a state of collapse quickly ensues and terminates in death; or the fatal event is preceded by an attack of severe bronchial inflammation, or by gangrene of the throat. In other cases, during the stage of excitement, symptoms of cerebral disease manifest themselves, and the patient dies comatose, about the end of the second week. Not unfrequently, also, there occur slight pain, tenderness, and tumefaction, at some part of the abdomen, with increased frequency of the pulse and respiration. The pain and tenderness of the abdomen quickly increase in intensity, and are, at length, attended with vomiting, eructation, general restlessness, and a tympanitic condition of the abdomen. At the end of six, seven or eight days, the pain and tenderness diminish or disappear; the pulse grows more rapid and feeble; the respiration more anxious, and the

vomiting more urgent. Cold, clammy sweats and universal collapse now speedily ensue, as the immediate precursors of death.

'In many cases, there is a much greater tendency to inflammations of the serous membranes, of the brain, or of the thoracic or abdominal

regions, than of the substance of the organs. (Tweedie.)

Not unfrequently, the inflammatory form of scarlatina, is attended with a very intense degree of febrile excitement; the inflammation of the throat runs very quickly into a gangrenous condition; there is often severe cerebral excitement, with redness of the eyes, intolerance of light, and a throbbing pain of the head, with tinnitus aurium, watchfulness, confusion of mind, and delirium. To these symptoms, there may succeed a state of stupor, occasionally interrupted by loud screams, or by fits of violence or of fretfulness. In other cases, symptoms of severe abdominal inflammation ensue; considerable pain, increased upon pressure, with tension, fulness and heat of the abdomen; short, quick, anxious respiration; very quick, contracted pulse; considerable irritability of the stomach, and either a costive state of the bowels or diarrhæa. In other cases, neither head nor abdomen seem so decidedly affected; but the greatest uneasiness is referred to the respiratory organs—the trachea, bronchii, pleura or lungs. Whatever may be the organ or organs affected, the stage of excitement is of short duration, and is succeeded by a greater or less degree of collapse; in which the heat of the surface is diminished, the energies of the system sink; the pulse becomes weaker and more quick; the skin relaxed; the tongue fouler; the respiration more laborious; and finally, the patient is attacked with convulsions, violent vomiting, or symptoms of suffocation, according to the organ principally affected, which quickly terminate in death.

The anginose form of scarlatina, and that accompanied with acute or sub-acute inflammation of the central organs, differ only in the

seat, and greater or less violence of the attendant affections.

One of the most frequent of the sequelæ of scarlatina, is an ædematous affection of the eyelids, face, and lower extremities; frequently, complete anasarca ensues after the disappearance of the eruption. Effusion within the serous cavities, is, also, not unfrequent. In cases of general anasarca, a sudden effusion sometimes takes place into the cavity of the chest, or into the ventricles of the brain, by which the patient is destroyed in a few hours. The urine, in the cases of dropsical effusion occurring after scarlatina, is often albuminous, (Blachhall,) and it has, in consequence, been supposed that the kidneys are affected with the morbus Brightii. (Rayer, Humilton, R. Willis.) In the great majority of cases, however, the dropsical symptoms are by no means unmanageable, but very generally yield to a simple plan of treatment. (Cullen, Wells, Sims, Wolff, Bateman, Armstrong, Philipp.)

Not unfrequently, spasmodic asthma, chorca, epilepsy, and neuralgic pains of the extremities are met with, as sequelæ to the inflammatory forms of scarlatina. (Kreysig, Cappel, Reil.) In other cases, chronic cutaneous eruptions, rheumatic pains of the joints, abscess, and enlargement of the tonsils, enlargement and suppuration of the parotids, and other glands of the neck, chronic opthalmia, otitis, with deep scated abscess, and fætid discharges from the ears; inflammation of the testicles; chronic bronchitis; tubercular phthisis; inflammation of the mucous membrane of the intestines, have been observed as consequences of severe cases of scarlatina. A complete loss of the hair, which never grows well again, is also a frequent occurrence

subsequent to the disease. (Armstrong.)

The autopsical appearances in fatal cases of scarlatina, are very dissimilar in different cases. In those instances in which the contagion appears to have been of so intense a character as to destroy life within a short period, and without the occurrence of reaction, or with only partial and imperfect reaction, no morbid appearances whatever are discoverable. (Tweedie.) In other instances, the mucous membrane of the mouth, fauces, pharynx, trachea and bronchii, is found to be strongly injected, and of a deep red colour. There is often more or less intumescence of the tonsils and fauces, which are frequently covered, to a greater or less extent, with diptheritic exudation. (Rayer.) Occasionally, the mucous membrane of the fauces is of a dark livid hue, and covered with dark coloured, ragged patches of exudation. Indications of violent inflammation of the mucous membrane of the larynx, trachea and bronchii, and lobar or lobular pneumonia are very frequent. (Hamilton, Mackintosh, Wolff.) In many cases, the mucous membrane of the intestines presents various grades of inflammation; follicular inflammation of the ileum, and occasionally of the colon, we have met with, in cases in which but slight indications of inflammation of the throat, or of the respiratory tubes, were observed. When symptoms of cerebral disease are present previous to death, injection of the membranes and substance of the brain, thickening and opacity of the arachnoid membrane, with effusion of transparent or lactescent serum, are generally the autopsical appearances met with. (Tweedie, Mackintosh.) In cases succeeded by dropsical effusion, the kidneys have presented the same change of structure, as occurs in the morbus Brightii. (Hamilton.) Purulent deposits have been occasionally observed in the cavity of the joints, without inflammation of the synovial membrane. (Tweedie.)

Scarlatina, very generally occurs as an epidemic, often of wide extent, and is evidently capable of being propagated by a specific contagion, emanating from the bodies of those labouring under the disease. There is, it is asserted, abundant evidence that a febrile affection, attended with scarlet eruption, and possessing all the other characters of scarlatina, occasionally results from exposure to cold. (Gregory.) That the disease may result from atmospherical causes, totally independent of contagion, we know from repeated observations of our own;—we suspect, however, that the cases referred to by Dr. Gregory, were severe cases of roseola, or the rötheln of the German writers, (Jahn, Himly, Most.) which, when of some intensity, strongly resem-

bles scarlatina.

In scarlatina, the period of the greatest activity of the contagion, is

said to be the period of desquamation. (Cazenave.)

It most generally, affects individuals but once during life. Recurrences of the disease have certainly been observed, but are of very rare occurrence, and are merely to be viewed as exceptions to the

general rule. (Bicker, Neuman, Richter, Burns.)

The subjects of scarlatina, are, for the most part, children; adults are, however, by no means exempt from the disease, though much less susceptible to it than the former; and in them, it is said, that it does not occur so soon after exposure to its contagion. It seldom attacks infants previous to weaning; and there is scarcely an instance upon record of its attacking those advanced in life. Females, it is said, are more susceptible than males; (Reid, Richter, Steiglitz, Wolff;) which does not, however, correspond with the results of our own experience. It is a curious circumstance, that there are certain individuals who appear to be entirely unsusceptible to the disease, never becoming affected, though fully exposed to its causes.

In some epidemics, scarcely any other than children are attacked, while in others, the disease is chiefly confined to subjects beyond the

age of puberty. (Reid, Wolff.)

Scarlatina prevails at all seasons, but a warm, humid state of the atmosphere, and low, marshy districts, would appear to promote its dissemination, and increase its violence. Great irregularity, at times, marks the progress of the disease, when epidemic. After raging extensively with great violence, it will occasionally suddenly abate or nearly disappear, and recur with symptoms of greater malignancy than before. The contagion appears sometimes to linger for several years in a certain district, affecting, from time to time, only a few individuals.

Treatment of the inflammatory form of scarlatina.—In simple and uncomplicated cases, no very active remedies will be demanded. It is the duty of the physician, however, to watch closely the disease throughout its entire course; for even, in apparently the mildest form, symptoms of a severe and dangerous character, are very liable to become suddenly or slowly developed, and which it is allimportant to attack at once by appropriate remedies. We cannot be too much upon our guard against unexpected and unfavourable changes; even in the mildest cases, the diligentia medici should never be lost sight of. (Armstrong.) It is important also, that the treatment of every case of scarlatina be commenced. if possible, at the very onset of the attack. By the simplest remedies, administered at this period, we will have it often in our power, to effect a very important modification in the subsequent features of the case; and frequently to render mild and extremely manageable an attack, which if neglected, might have proved one of extreme violence and danger.

In every case of inflammatory scarlatina, we should never hesitate, upon the occurrence of violent symptoms, to reduce them at once by active depletion, without the fear of supervening debility; recollecting

always, that when demanded, the earlier active remedies are resorted to, the more efficient will they prove, and the less doubtful is their propriety; and, that while morbid action in its early stage is frequently with ease subdued, after the lapse of even a few days, when it has become more firmly seated in important organs, it is with difficulty, and too often ineffectually, combatted. This is particularly true in reference to the more violent and complicated forms of scarlatina. The stage of excitement is often excessive, and of short duration; extensive disorganization of some important organ is rapidly effected, and an irretrievable exhaustion of the vital power is thus early induced. It is this speedy occurrence of collapse that has induced practitioners to forbid the lancet, and every evacuant, in the treatment of scarlatina, and to administer cordials and tonics, in order to prevent the occurrence of debility, or to recover the patient from it.

It unfortunately happens, that the physician is seldom called in until the stage of excitement is fully developed; whenever, however, he has it in his power, the treatment of scarlatina should be commenced during the forming stage, by the administration of an emetic of ipecacuanha or tartarized antimony, followed by the warm bath, and a brisk cathartic—calomel succeeded by castor oil. The patient immediately upon his coming out of the bath, being lightly covered in bed, and given to drink plentifully of some bland and tepid diluent.

The early exhibition of an emetic, in all cases of scarlatina, has the recommendation of nearly every one who has written on the disease. (Withering, Sto'l, Reil, Steiglitz, Sims, Rush, Richter, Armstrong, Dewar, Wood, Stark, Graves.) Our own experience is decidedly in favour of the practice. Dr. Rush, combined the emetic with a cathartic, by adding to five grains of calomel one grain of tartarized antimony, or five of ipecacuanlia, and in many cases, it will be found an excellent Should any symptoms occur, indicating a state of engorgement of either of the internal organs, immersing the patient in a warm bath strongly impregnated with salt, and immediately afterwards, the application of a few leeches in the immediate vicinity of the affected organ, or the abstraction of a few ounces of blood from the arm, and subsequently the administration of a brisk cathartic, will not only produce immediate relief, but in nearly every case, will moderate the subsequent reaction, and save important organs from severe disease or disorganization. (Armstrong.) We have repeatedly experienced the good effects of this practice. The abstraction of blood, at this early period of the disease, is proper, only, however, when unequivocal indications of an overloaded condition of some internal organ exist; and even then, should be practiced cautiously, and to a very moderate extent.

The treatment proper after the occurrence of febrile reaction, will in a great measure, depend upon the extent of the excitement, and the simple or complicated character of each case. In the simple form of the disease, with a moderate degree of febrile excitement, and but slight affection of the throat, or of any of the internal organs, but little

else will be required than active purgatives, some gentle diaphoretic, the free exposure of the patient to a cool, dry atmosphere, cool drinks, and a spare, light, unirritating diet, composed entirely of farinaceous articles. The purgatives should be so administered, as to procure full and free discharges from the bowels, throughout the stage of excitement; calomel is unquestionably the best article we can employ; it should be prescribed in a full dose, in combination with jalap or rhubarb, and followed by divided doses of a solution of the sulphate of magnesia, or of the infusion of senna with the addition of any of the saline cathartics. We are in the habit of directing from three to six grains of calomel, and the same quantity of calcined magnesia, every other night, and during the day, a teaspoonful, every three hours, of a saline mixture with the addition of a small portion of tartarized antimony. Under this treatment, the milder forms of the disease will, very generally, be conducted to a favourable termination.

*R.—Aquæ, Jiv.
Sulph. magnes. Jvj.
Tart. ant. gr. j.
Spir. æth. nitr. Jiv.
Syrup. limon. Jss.—M.

In the milder cases of the anginose form of scarlatina, active purgatives, throughout the stage of excitement, will generally be found equally efficacious in subduing the pungent heat of the surface, the violent pain of the head, the turgescence and flushing of the countenance, and the full, quick pulse, which mark the disease, and in preventing any extensive pseudo-membranous exudation in the throat. (Hamilton, Armstrong.) Calomel is here the purgative which should invariably be preferred; it not only effectually unloads the bowels, and diminishes the morbid excitement, but exerts an influence over the whole capillary system, by which the circulation through it is equalized, and morbid action prevented or subdued. The calomel may be administered in the same manner as in the simple form of scarlatina. When considerable inflammation and tumefaction of the throat occurs, we think that we have found very decided benefit to result from a combination of the hydrochloride of ammonia and tartarized antimony, given in repeated doses.º The hydrochloride of ammonia is a favourite prescription of some of the German physicians, in these cases. (Richter.)

*R.—Aquæ, Jiv.
Sulph. magnes. Jv.
Hydrochlor. anmoniæ, Jij.
Tart. ant. gr. j.
Syrup, limon. Jes.—M.
Dose, a tea spoonful every three hours.

Whenever the febrile excitement is very intense, and the inflammation and tumefaction of the fauces considerable, there should be no hesitation in directing the abstraction of blood, to an extent commensurate with the age and vigour of the patient, and the violence of the symptoms. To trust such cases to the effects of purgatives, antimo-

nials and cold applications to the skin, is, if not to endanger the life of the patient, to prolong the duration of the disease, and to allow the development of various affections of the internal organs, difficult to manage, and the effects of which are of long duration, if they do not continue for the remainder of the patient's life. The bleeding, in these cases, may be either from the arm, or by leeches upon the sides, and over the anterior part of the throat. After the loss of a proper amount of blood, the purgative plan will often succeed in very readily subduing the remaining symptoms, and insuring a prompt and favourable convalescence. We are to recollect that blood-letting, purging, and all other depleting remedies, are to be confined to the stage of excitement;—though the occasional use of calomel in small doses, combined with ipecacuanha and extract of hyosciamus or camphor, will be required to preserve a regular condition of the bowels, even after the

stage of collapse has set in.

In all the more violent cases of scarlatina, especially in those in which the brain or the thoracic or abdominal organs are threatened with inflammation, or in which internal inflammatory action has already commenced, blood-letting, carried to a proper extent, is essential to the safety of the patient. (Cullen, Marcus, Rush, Frank, Heim, Richter, Armstrong.) Properly timed and judiciously practised, it is the only remedy calculated to rob these violent cases of their malignancy, and very general fatality. The abstraction of a very moderate quantity of blood, in the early period of the stage of excitement, or upon the first appearance of the slightest symptoms indicative of visceral inflammation, will, in general, be sufficient; but if the latter has acquired any degree of intensity, particularly if the patient is of a plethoric and robust habit, and the febrile reaction is violent; the bleeding should be much more copious, and followed by leeches or cups in the vicinity of the affected organ. The local phlegmasiæ which arise in the course of scarlatina, are often of a sub-acute character, and may be overlooked, unless the practitioner watch closely the case. When they are detected in the early stage of the period of excitement, a moderate bleeding from the arm will be advisable, (Armstrong;) but in the generality of cases, and at a later period, leeches or cups should be preferred to the lancet.

Whenever the symptoms of the case are such as to indicate the necessity of direct depletion, the earlier it is resorted to the better; and the more promptly it is carried to the extent required for reducing the violence of the reaction, or of controlling internal inflammation, the more certain will be its beneficial results, and the greater our hopes of arresting the destructive march of the disease. Should the first bleeding be found not to have permanently reduced the violence of the prominent symptoms, after a short interval, it will be proper to repeat it, though it will seldom be necessary or prudent to carry our second bleeding to an equal extent with the first. In most cases, indeed, the necessity of repeating the general bleeding, may be obviated, by the application of a sufficient number of leeches or cups,

as near as possible to the organ chiefly affected. But, if possible, a repetition of the bleeding, either general or local, should be avoided,

by a sufficient depletion in the first instance. (Armstrong.)

In tepid and cold affusion, or sponging, we have a remedy, which in a large number of the cases of scarlatina, is equally efficacious with blood-letting, and one much more generally applicable in the treatment of the disease. In many instances, it is almost the only febrifuge, diaphoretic and anodyne, that will not disappoint the expectations of the practitioner. (Bateman.) When resorted to under appropriate circumstances, and at a proper period, it will be found very speedily to diminish the frequency of the pulse, to abate the thirst, render the tongue moist, the skin soft and cool, and the eyes bright, and to be speedily followed by a calm, refreshing sleep. It has been even said, that in many instances, when resorted to in the commencement of the stage of excitement, it has had the effect of cutting short the disease. (Burns, Armstrong.) It may be resorted to in all cases of scarlatina, during the early period of the stage of excitement, when the heat of the entire surface is steadily above the natural standard when there is no sense of chilliness present, and no general or profuse perspiration. In the simple and anginose forms of the disease, there can be no doubt of its propriety and efficacy; and it should be freely used at short intervals, day and night, until the heat of the surface is permanently subdued. As a general rule, it will require to be repeated from four to six times, during at least the first twenty-four hours of the stage of excitement, to be productive of any permanent advantage. While in every case, in which we are permitted to employ it, we believe that cold affusion should be preferred in the application of cold to the surface, as the mode from which the most benefit is to be derived; yet when from the fears of the patient, the prejudices of his friends, or any other circumstance, we are prevented from employing it, we must content ourselves with free and repeated sponging of the entire surface, with cold water, or cold water and vinegar. It is only in the commencement of the stage of excitement, that we are to expect from cold affusion or sponging, any decided advantage in the anginose form of scarlatina: - after the third day, it will, in general, be prudent to substitute the tepid for cold affusion, which may be repeated daily, until towards the termination of the excitement. (Armstrong.) Many practitioners prefer tepid affusion or sponging from the commencement, in cases in which the throat is much affected; we are convinced, however, when the heat of the surface is very considerable, and regularly diffused, the application of cold water is preferable in the commencement; it is certainly much more efficacious than tepid water.

By some, the warm bath is recommended in the treatment of scarlatina. (Clark, Wood.) It will, unquestionably, be found in many cases a very valuable remedial agent. It may be employed in all cases to which the tepid affusion is adapted; and in those accompanied by symptoms of abdominal disease, it should invariably be preferred to either cold or tepid affusion; covering, in these cases, the abdomen with a warm emollient poultice, when the patient is taken

out of the bath, is calculated to increase its efficacy.

In the advanced stage of even the more violent cases of inflammatory scarlatina, neither the cold nor tepid affusions will be proper. At this period, the first especially, would prove decidedly injurious. When the patient is much exhausted, it will be prudent to avoid the fatigue incident to the employment of even the warm bath. If judged necessary, partial ablutions with tepid vinegar and water, may be practised; at the same time, that the cool, fresh air is freely admitted into the patient's chamber.

In cases of scarlatina attended with visceral inflammation, cold affusion has been recommended in the commencement of the stage of excitement. We are not prepared to assent to the propriety of this recommendation; there may occur cases, we admit, in which tepid affusion will be found useful, as a means of reducing the morbid heat of the skin, and in this manner, moderating the violence of reaction: as a general rule, however, we believe that the tepid or warm bath is an agent much better adapted to this form of the disease. When the brain is much affected, cold affusion upon the head, or sponging the scalp with cold water, will generally be productive of good effects and may be employed in conjunction with the warm or tepid bath.

When there is a considerable degree of inflammation and swelling of the tonsils and fauces, by which the act of swallowing is rendered difficult, the application of a blister to the throat, it is said, has been occasionally found decidedly beneficial. (Heberden, Rush, Willan, Clark.) We confess, however, that we have not found this practice one from which, in such cases, much advantage has in general resulted: this is the experience, likewise, of many of the writers on the disease. (Sims, Withering, Armstrong.) In most cases, the early and judicious application of leeches to the throat, will render the use of blisters unnecessary. When the affection of the throat is attended with considerable difficulty of swallowing and of respiration, the inhalation of the vapour of warm water and vinegar, will procure relief. (Rush.) An emetic we have often found productive of good results. We are, also, accustomed to have the throat washed with a pretty strong solution of the acetate of lead, and always with the best effects. When the fances and throat are extensively covered with patches of pseudomembranous exudation, for the local treatment proper in such cases, we refer to our section on pseudo-membranous inflammation of the

In cases of scarlatina complicated with visceral inflammation, blisters over the affected organ, will often have a favourable influence upon the local disease. (Armstrong.) In the advanced stage of the disease, they should seldom be employed, in consequence of the general irritation they sometimes produce, and from the danger of their causing gangrene of the part upon which they are applied.

Throughout the attack, the patient should be confined to a large, well ventilated apartment, the utmost attention being paid to ensure

the strictest eleanliness of the chamber, as well as of the bed-clothing, and the garments worn by the patient. His diet should be adapted to the degree and stage of the disease, but should be invariably spare, light, and easy of digestion—being composed entirely of farinaceous articles, boiled in water. His drinks should be given cool, and slightly mucilaginous; adding to them some of the more agreeable vegetable acids, will render them more palatable, and at the same time, as many suppose, somewhat remedial. In the anginose form of the disease, the dilute mineral acids have been considered advantageous. Diluted sulphuric acid, has been said, when given freely, to produce an excellent effect; (Steiglitz, Wolff;) while others recommend the hydrochloric acid, largely diluted with water, as at once a drink and medicine. (Montsey.) The plain soda water of the shops affords, in many cases, a very grateful and refreshing drink. The bowels of the patient should be kept regularly open, by any mild laxative. daily use of the tepid or warm bath will always be found advantageous.

After the disappearance of the cruption, it will be necessary to allow a more nutrititious diet; but at the same time, we should be cautious to proscribe all indigestible and stimulating articles of food, and to prevent too much of even the lightest and most appropriate from being taken. Daily exercise in the open air, in mild, dry weather, will be proper, as soon as the patient is sufficiently strong to attempt it. In some cases, it will be necessary to aid in the restoration of the patient's strength, by the administration of some gentle tonic; the cold infusion of cinchona—the sulphate of quinia—infusion of wild cherry-tree bark, may, in such cases, be employed with advantage. The more stimulating tonics and wine should be

avoided.

For some considerable time subsequent to his recovery, the patient should be carefully guarded against exposure to cold or damp, which is very apt, even after recovery from attacks of the mildest and most simple character, to produce dropsical effusions, and other disagreeable consequences.

To promote the growth of the hair, which is apt to fall out after an attack of scarlatina of any severity, during convalescence, the head should be shaved two or three times, and frequently washed with warm water, followed by smart friction with a brush or coarse towel—care being taken, in cold and changeable weather, to preserve the

head moderately warm by a light eap.

Congestive Scarlatina.

It is this form of the disease which constitutes the malignant scarlatina of most writers. The suddenness of the attack, in the more violent cases, the extreme faintness, and the pale and sunken countenance of the patient; the dark livid or dusky appearance of the eruption; the absence of any decided reaction; the dark, gangrenous appearance of the throat; the rapid occurrence of general depression of the

powers, with the dissolved state of the blood, the petechiæ, vibisces, &c., have all concurred to deceive physicians in regard to the real character of the disease, and lead them to view it as one bearing the unequivocal stamp of malignancy, and requiring for its cure, the most active stimulants, antiseptics, and tonics. More sound notions of general pathology have led, however, to more correct views in regard to the nature of this form of scarlatina, and its appropriate treatment.

The congestive form of scarlatina has, with great propriety, been divided into the regular and irregular. The first being unattended with any marked reaction, while in the latter, a partial and irregular reaction is manifested. (Armstrong.) The more violent cases of the first variety, run their course with extreme rapidity, and are always attended with the utmost danger. Often has the patient been known, when the disease prevails epidemically, never to recover from its first stroke, but almost immediately, upon exposure to its infection, to sink into a state of complete insensibility, terminating shortly in death. The irregular form of congestive scarlatina, though confessedly a very formidable malady, is, however, by no means, so dangerous as the former, nor so rapid in its progress; and as it forms a kind of intermediate link between the inflammatory and purely congestive

varieties, it will be first considered.

The irregular congestive scarlatina attacks pretty much in the same manner as the inflammatory; with a sense of chilliness, headache, sickness and lassitude, &c.; which symptoms, after continuing for a much longer period than in the former, are succeeded by a partial reaction—the heat being principally confined to the trunk and upper portions of the extremities, (Armstrong,) while the wrists, hands, ancles, and feet are often cool, or at least remain of the natural temperature. The reaction varies throughout the day; the patient at one time complaining of a sense of heat, and at another of chilliness; the latter being often complained of, when the surface of the body feels hot to the touch of another person. During each increase of excitement, the eruption upon the skin becomes more florid, and again fades, as the reaction subsides. The fauces, at the commencement of the stage of imperfect reaction, become more or less red and swollen, and in a few days, greyish specks make their appearance upon its mucous membrane, and assume a dark, gangrenous appearance, often as early as the end of the first week, but more commonly, not until the second week.

The efflorescence upon the skin is less diffuse and of a duller hue, than in the inflammatory form; it is also more liable to disappear, leaving the face of a sickly pallid colour; the lips and edges of the tongue are less intensely red. Early in the attack, the patient often evinces an appearance of dejection or alarm, which is strongly expressed in his countenance; (Armstrong;) occasionally, he sinks early into a state of dullness or stupor—of confusion or indifference;—the eyes having a dull, vacant look, with dilatation of the

pupils. In some instances, the mind remains for a time perfectly clear; though there is invariably a sense of uneasiness in the head, and often of oppression and anxiety in the region of the heart. Delirium is not common in the early stage, but it very generally ensues at a later period, and is usually a conspicuous symptom in the advanced stage of the disease. (Armstrong.) The bowels are irregular, and the discharges always unnatural in colour and odour, and indicate either a morbid or deficient secretion of bile.

At the commencement of the attack, the pulse is slow and oppressed, but with the effort at reaction, becomes quick and variable, though it

rarely acquires much firmness or fulness.

When uninterrupted in its progress, this variety of scarlatina often runs on to the end of the second week, and sometimes for a much longer period. When it terminates favourably, the patient recovers very slowly. Unless actively treated in its early stage, most generally symptoms indicative of some serious affection of one or more of the internal organs, ensue, which, if not promptly arrested, augment in violence, and coma, low muttering delirium, extreme difficulty of respiration, violent vomiting, and purging occur, and speedily terminate in death. Towards the close of the disease, indications of a dissolved state of the blood, ensue; such as dark coloured petechie, oozing of dark coloured blood from the mouth, nostrils, bowels, &c.

In this variety of scarlatina, there is, throughout, an imperfect effort at reaction; the stage of excitement being never fully developed. In the purely congestive variety, next to be described, there is, as it were, but one continued stage of oppression, without any decided symptoms of excitement, which gradually augments, until life is extinguished. In this latter form of the disease, the patient is for the most part, attacked suddenly, with paleness of the face, faintness, and nausea; he complains chiefly of a sense of heaviness, pain, and dizziness of the head; great oppression, and considerable uneasiness at the præcordium. Occasionally he sinks at once into a state of the utmost confusion and torpor of the intellect, and makes but little complaint. In other cases, he may continue about for one or two days, in a languid, listless condition, and then take to his bed, as though worn out by great fatigue or mental anxiety. When the disease is fully formed, the respiration becomes quick and anxious, or slow and laborious. The paleness of the countenance is often mixed with a degree of lividness; the eyes are dull, though occasionally they have a glassy appearance, and acquire a vacant or drunken expression in the course of the disease. The mind soon becomes roused into delirium; or, there is an indifference to surrounding objects, succeeded by a state of stupor, in which the patient expires. From the commencement of the attack, the pulse is ordinarily low, impeded, and irregular, and generally continues unchanged, to the close of the disease. The tongue is at first, commonly paler than natural, whitish in the centre, and thickly covered with ropy mucus; towards the close of the disease, it often assumes a rough or darkish aspect. The breath is usually offensive. The bowels are commonly distended with flatus, costive or irregular, in the first stage, but are frequently loose in the last; the discharges being either darker or lighter than natural. There is often great irritability of the stomach; occasionally, however, it retains whatever is taken into it. As the disease advances, deglutition becomes more and more difficult. The efflorescence from its first appearance, is of a purplish, coppery, or livid hue, which becomes deeper as the disease proceeds; occasionally, it quickly recedes, without again returning. In some very rapid and fatal cases, the throat is but little affected;—when, however, the disease continues beyond the fourth day, and the vital powers begin rapidly to sink, the fauces are generally covered with dark coloured specks. The heat of the surface is usually rather below, than above the natural standard; and even when the central portions of the body are warm, or even hot, the extremities are, for the most part, cold.

This form of scarlatina frequently runs its fatal course in two, three, or four days from the occurrence of the symptoms of general depression; its final stage is almost invariably attended with petechiæ, oozing of dark coloured blood from the mouth or nostrils, and discharges of the same kind from the bowels or bladder. A few hours previous to dissolution, there is often a transient glow over the body, a dark flushing of the face, great difficulty of respiration, accelerated pulse, and partial or general perspiration;—the excitement, however, quickly subsides, the extremities become cold, the face of a cadaverous hue, and where the skin is pale, it has often the smooth waxen appearance of a corpse. Under such circumstances, death seldom

lingers long.

The prominent symptoms of both the varieties of scarlatina just described, are evidently dependent upon extensive engorgement of the central organs, and of the large venous trunks; the abortive efforts at reaction, in the one case, giving rise to a degree of irregular and transient excitement, while in the other, the organic functions of the brain and nervous system, appear to be completely paralysed by the engorgement of their blood-vessels, and the patient sinks from a gradual extinction of the powers of life, in consequence of the organs being unable to react under the load by which they

are oppressed.

In the irregular congestive variety, the congestion is seldom to such an extent as to occasion any immediate danger; but the more important organs are predisposed to serious lesions, from the irregular determinations of blood in the arterial capillaries which are liable to take place during the stage of imperfect reaction. The brain, the lungs, and abdominal organs are those which most commonly suffer, and present, after death, either an injected state of their vessels, or the indications of sub-acute inflammation. (Armstrong.) In the regular congestive variety, the brain, the lungs, and the liver, as well as the heart, and the large vessels in its vicinity, are found to be extensively

engorged with dark coloured grumous blood, without any vestiges

of inflammatory action.

In cases of congestive scarlatina, it is only in the early period of the attack, that the active measures demanded for its cure, can, with propriety, be carried into effect; it is certain, at least, that it is then only that we can expect any decided benefit to result from them. Called, therefore, to a child that has been recently attacked, he should be immediately immersed in a warm bath, his body being, at the same time, briskly rubbed with the hand or a flannel cloth. On coming out of the bath, he should be carefully wrapped in a blanket, and have sinapisms applied to the extremities, and over the epigastrium. In violent cases, if a warm bath cannot be immediately prepared, no time should be lost in waiting for it; but frictions to the surface, with a warm flannel cloth, impregnated with any warm, stimulating liquor, as vinegar, common spirits, cologne water, bay rum, &c., should be instantly employed; while bottles or bladders filled with warm water, are applied to the lower extremities. A full dose of calomel should be administered without delay, and followed, in a few hours, by a proper dose of infusion of senna with the addition of the sulphate of magnesia, or of the compound powder of jalap;—and if these be tardy in their operation, some active purgative enema should be resorted to. During the first four or five days, it is important to repeat the bath, at least twice in the twenty-four hours; and in severe cases, its action may be augmented by the addition of salt, or a small quantity of powdered mustard;—subsequently, the warm bath should be used daily, until symptoms of recovery ensue. Calomel would appear, in most cases, to be the purgative best adapted to this form of scarlatina:—it unloads the liver of its undue amount of blood; excites the mucous membrane of the intestines to a more healthy secretion; and seems to produce throughout, a more equable and energetic action of of the capillary system. The calomel should be administered at first in full doses, and followed by such cathartics as will insure its full action upon the bowels;—during the stage of oppression, and until general decided reaction is established, from four to five evacuations from the bowels, should be procured daily. (Armstrong.) As soon, however, as the pulse becomes more free and full, the skin of a moderate and equable warmth, and the discharges from the bowels of a more healthy appearance, the calomel may be omitted, and castor oil, magnesia and rhubarb, or any other mild laxative substituted; calcined magnesia, saturated with lemon juice, is said, under the circumstances referred to, to form a very excellent purgative: (Armstrong:) the turpentine, combined with castor oil, is the one we have generally employed, and it has appeared to us to be beneficial, independently of its action upon the bowels. It is important to recollect, that until convalescence is fully established, a free and regular condition of the bowels should be maintained, without, however, endangering the occurrence of excessive purgation; -a neglect of this precaution, may cause a recurrence of all the more serious symptoms.

Every case of congestive scarlatina should be closely watched, and if symptoms ensue indicative of considerable oppression of the brain, lungs, or other important organ, the cautious abstraction of a small quantity of blood, by leeches or cups, from the neighbourhood of the affected part, will, in general, produce great relief, and often ensure a permanent, moderate, and general reaction. Much judgment will be demanded in the employment of blood-letting, in these cases; its effects upon the pulse should be carefully watched, and if the slightest appearance of sinking occurs, it should be immediately suspended. The best time for bleeding is immediately upon the patient coming out of the bath, or it may be performed, whilst the patient remains in the bath:-the amount taken away should, under all circumstances, be moderate, even though a repetition of the bleeding be thought advisable. Bleeding is proper only, in the early period of the attack, unless violent reaction, as is sometimes the case, should occur, when the treatment should be precisely the same as in any other open form of disease. In numerous instances, bleeding constitutes one of our most important remedies in congestive scarlet fever, and upon its cautious and judicious employment, the safety of the patient will mainly depend; but, while it should be unhesitatingly resorted to whenever the brain or lungs exhibit symptoms of serious oppression, we are to recollect, that it is not a remedy equally applicable to every case, and that in none can it be employed with the same freedom, as in diseases of a purely inflammatory character. In the more violent cases of congestive scarlatina, the cautious abstraction of blood is even more important than in the milder cases; -here immediately upon the patient leaving the bath, or while he remains in it, a vein should be opened, and a quantity of blood slowly drawn off, sufficient to free the pulse from its oppression; the skin, in the mean time, being well rubbed with a coarse cloth or flesh brush dipped in warm vinegar, in which a quantity of salt has been dissolved. The finger should be kept constantly upon the pulse, and if it become more full, free, and regular, the flow of blood may be continued; but if, on the contrary, the pulse becomes weaker, or seems disposed to sink, the orifice should be immediately closed; though subsequently it may be again proper to try the effects of bleeding, with similar precautions. On first opening the vein, it may happen, in very violent cases, that no blood will flow, or only a few drops; the diligent use of frictions to the skin, will, however, very frequently cause it to flow in a full stream, with the most decided relief to all the more prominent symptoms. In congestive diseases, there is reason to believe, that many a life has been lost by too quickly binding up the arm, when there is any difficulty of procuring blood, in the first instance; -but, at the same time, it is all-important, that the bleeding be not carried too far, even when the pulse rises under the flow of blood, as a dangerous state of collapse may be induced; above all, should the slightest approach to syncope be avoided. In

these violent cases, drawing the blood from the arm is unquestionably to be preferred whenever it can be carried into execution; but, when this cannot be done, we should apply cups or leeches in the vicinity of the organ which appears to labour under the greatest amount of oppression, sinapisms being, at the same time, applied upon the extremities and frictions to the surface, generally. The great object of the practitioner should be, to relieve, as quickly as possible, the brain from its undue load of blood; by so doing, he will increase the nervous energies of the other organs, and enable them the better to relieve themselves of the oppression, under which they labour. best effects have resulted, in some cases, from a division of the temporal arteries, when blood could not be obtained from the veins of the arm. (Armstrong.) In violent attacks, after the warm bath, frictions to the surface, and the cautious abstraction of blood, the administration of a large stimulating enema—the ordinary enema, with the addition of turpentine, may be employed—will often produce prompt relief, by unloading the lower portion of the intestinal canal, and diminishing the irritability of the stomach. (Armstrong.)

In conjunction with the remedies already recited, some gentle diaphoretic will often be found beneficial; the liquor acetatis ammoniæ, or a combination of camphor, ipecacuanha, and hydrochloride of ammonia, may be employed. In some instances, a weak infusion of serpentaria, or small and repeated doses of the carbonate of ammonia, will be found to produce a gentle and universal diaphoresis, which contributes materially, in relieving the internal organs of their undue load of blood, and, in this manner, occasioning a gentle and permanent reac-

tion.

^aR.—Pulv. camphor. gr. iv.—vj.
—— ipecacuanhæ, gr. iij.
Hydrochlor. ammoniæ, Đijss.—M. f. ch. No. xij.
One, to be given every three hours.

The patient may be allowed to partake of any warm diluent, as thin gruel, panada, weak chicken broth or the like;—given immediately upon removal from the bath, they tend to promote reaction. These drinks may be continued at regular intervals, throughout the disease. When, however, the skin remains cool, and reaction is, with difficulty, established, it will be proper to allow the patient small and repeated portions of warm wine whey, or warm wine and water; but the moment that reaction ensues, every species of diffusible stimuli should be immediately discontinued, and warm diluent drinks substituted.

When a state of collapse begins to manifest itself, it will be necessary, in most cases, to administer moderate portions of some diffusible stimulant, as warm wine whey, or a little Madeira wine diluted with milk. It is probable, also, that the infusion of serpentaria, and small doses of the carbonate of ammonia, will, in such cases, prove beneficial. But, while these remedies may often be demanded to support the patient's strength, under the circumstances referred to, it must be, also, recollected, that nothing can be productive of worse consequences

than a too early resort, in congestive scarlatina, to the use of the mildest stimulants; even, in the stage of collapse, we should be cautious not to give them in too large quantities, or at too short intervals. Close attention, and much judgment will be demanded properly to time their use, and graduate the proper extent to which they should be carried.

If, from neglect, or from a timid and injudicious treatment, of the early period of the attack, an organic lesion of some important organ has been allowed to occur, we have but little to expect from the effects of any class of remedies. Wine and other stimulants, in particular, should be withheld, as they invariably augment all the more

dangerous symptoms.

When, by an energetic and well directed treatment, a general, free, and moderate reaction has been brought about, the stage of collapse will be slight, and of short duration, and require no difference in its management, from that following the inflammatory form of scarlatina. The utmost care should be taken to guard against exposure to cold or damp, to avoid every species of stimulating food or drink, and to preserve the bowels in a free, regular condition. By a neglect of these precautions, dropsical effusion—of more frequent occurrence, after the congestive than after the other varieties of the disease, will very generally be produced, or the occurrence of a sub-acute inflammation, particularly of the brain or alimentary canal, of long continu-

ance, and difficult to manage, will be endangered.

We are perfectly aware, that, in adopting, as we have done, the pathological and practical views of Dr. Armstrong, in relation to the more violent, or, as it is fashionable to term them, "the malignant" forms of scarlatina, we are running counter to the views of many distinguished practitioners of Europe, and our own country. This, however, although we may regret it, we cannot avoid without laying aside the results of our own experience, which has been somewhat extensive, and which early taught us the inefficacy of stimulants and tonics, as directed by Huxham, Cullen, Percival, Hamilton, and a lost of even later authorities, in the treatment of the more aggravated grades of scarlatina; we have had a full opportunity, in the course of several severe epidemics of the disease, to test the value of the practice we have recommended, and have no hesitation in saying, that, when judiciously carried into execution, it is calculated to disarm the disease of its malignancy, and to prevent the necessity of a resort to "powerful cordials, tonics, and antiseptics," in the advanced period of the attack, to remove "the putrid symptoms which, then, show themselves." The "bold and indiscriminate use of the lancet" we should certainly strongly object to; but of the good effects a cautious use of blood-letting, in the manner, and under the circumstances directed, is calculated to produce, we speak from actual observation; it is unquestionably, in a large number of cases, the only "restorative and tonic," upon which any confidence can be placed.

The discredit into which blood-letting has fallen, in the treatment

of all the forms of scarlet fever, has probably arisen from the want of due attention to the circumstances, in which it has been prescribed. It is a remedy of great efficacy, for good or for evil. If used at random, and without a careful discrimination of the circumstances of every individual case, it will, assuredly, justify the reprobation that has been thrown upon it, and may prove "a fatal practice." (Currie.) If used too early, and in insufficient quantity, it will only diminish the strength of the patient, without lessening the force of the fever; and, if delayed too long, it will accelerate the effusion into the head, to which the disease is fast hastening. If, on the other hand, it is practised at the proper time, and in sufficient quantity, it will prove a means of cure, safe and successful, far beyond any other, with which we are acquainted. (Devar.)

In a table of two hundred and sixty-eight cases occurring, during three different epidemics of considerable extent and severity, and treated according to the plan here laid down, two hundred and twenty-three recoveries, and forty-five deaths are enumerated. The whole of the cases occurred in children under twelve years of age, and the majority of them of the poorer classes of society. From this table are excluded all those cases which did not come under treatment

during the early period of the attack.

					Number of Cases.	Boys.	Girls.	Recovered.	Dead.	Boys.	Girls.
Simple scarlatina				-	10	6	4	10		iz. 0	0
Scarlatina anginosa			-		82	21	61	78	4	1	3
Scarlating, complicated principally of the lut											
testinal canal -	-	-	-	-	78	42	36	56	22	10	12
Congestive scarlatina	-	-			98	69	29	79	19	8	11
	To	otal			268	138	130	223	45	19	26

Before quitting the subject of scarlatina, it will be proper to say a few words, in relation to some of its most common seguclæ. One of the most frequent is anasarca, either local or general; in many cases, effusion takes place likewise, in the brain and serous cavities generally, (Percival,) and this occasionally after the mildest cases; (Percival, Withering;) generally, however, it occurs only after an attack of the more violent forms of the disease. (Withering, Armstrong.) The effusion is, in a large number of instances, the result of exposure to cold and damp, or of an injudicious administration of stimulants and restoratives, during the period of convalescence. It may, however, occasionally occur as a strictly complimental affection. (Reil.) It is seldom attended with much danger, and is readily removed by an appropriate treatment. In many cases, the effusion is accompanied with a quick, frequent, tense, and sometimes full pulse; a hot and dry skin, costive bowels, and scanty, high coloured, and albuminous urine. under these circumstances, blood-letting will, in general, be demanded and its good effects are attested by numerous writers. (Burserius, Richter, R. Willis, Mackintosh, Wood, Stark.) Combinations of calonel, nitrate of potassa, and digitalis, will be found often to remove the effused fluid, with great rapidity. Calomel alone, in large doses, five to ten grains daily, is strongly recommended, in these cases. (Richter, Kreisig.) As a drink, a weak solution of the bi-tartrate of potassa will be among the best we can give. In some cases, benefit will be derived from the following mixture. The daily use of the tepid bath followed by frictions, will always be advantageous. Perfect quietude should be enjoined, in a dry, freely ventilated apartment, and every precaution should be taken against exposure to cold or damp. The mildest farinaceous diet should be the only one allowed.

*R.—Calomel. gr. xij.

Nitrat. potassæ, 3j.

Pulv. digitalis, gr. iv.—M. f. ch.

No. xij.

One to be given, for a dose, every two,
three, or four hours.

bR.—Aquæ, 3vj.
Sulph. magnesiæ, 3iv.
Spir. æth. nitr. 3iv.
Nitrat. potassæ, 3ij.
Tart. antimonii, gr. j.—M.
Dose—a tea spoonful, every three hours.

When the effusion is connected with a relaxed and debilitated condition of the system, bleeding will be improper. If the bowels are confined, they should be freely evacuated by calomel followed by some gentle aperient. (Richter.) As diuretics, the squill, spirits of turpentine, and tincture of cantharides, have been highly recommended. (Hufeland, Buckholz, Wolff.) The sulphate of quinia, the proto-carbonate, and tincture of the sesquichloride of iron, will often be found

decidedly advantageous.

Scarlatina, particularly the anginose variety, is often succeeded by a deep seated pain in one or both ears, and deafness, followed, in a short time, by a discharge of either pus or a fœtid serous fluid. This, in general, arises from the inflammation of the throat, extending along the eustachian tube to the internal ear. When violent, long continued or neglected, this inflammation sometimes terminates in an entire destruction of the organ of hearing. In the early period of this variety of otitis, leeches should be applied behind the external ear, followed by repeated blisters, and the bowels should be kept, in a regular, healthy condition, by small doses of calomel, prepared chalk, extract of hyosciamus, and ipecacuanha, at bed time, and mild aperients, during the day.

*R.—Cretæ ppt. gr. xxxvj.
Calomel. gr. xij.
Pulv. ipecac. gr. iv.
Ext. hyosciam. gr. vj.—M. f. ch. No. xij.

When a discharge from the ear has occurred, the meatus should be frequently syringed with tepid barley water or other bland mucilaginous fluid; or when the discharge is dark coloured and offensive, the ear may be injected twice a day, with a weak solution of the chloride of soda, or a decoction of black oak bark. The patient should be put on a light, nourishing diet, have regular exercise daily, in the open air, when the weather is mild and clear. Repeated blis-

1 ... Pret Dred

ters behind the affected ear, we have found, in many cases, to arrest the discharge, and occasionally, under their use, the function of the ear has been fully restored.

From the severe and fatal character of scarlatina, particularly when it occurs as an extensive epidemic, various plans of prevention have been proposed. The one which has attracted most attention, is that suggested, upwards of thirty years ago, by the celebrated founder of homeopathy. (Hahnemann.) When given in small and repeated doses, it was long known, that belladonna would cause a heat and dryness of the throat, and an efflorescence upon the skin having a very close resemblance to that of scarlatina, he hence maintained, in accordance with one of the fundamental principles of his system, that, when administered so as to give rise to these symptoms, it would prove a certain preventive against the occurrence of the latter; and that such is actually the case, we have the testimony of many respectable practitioners. (Hufeland, Berndt, Dusterberg, Koreff, Thiebaud, Barry A. T. Thomson, Green.) We have, in repeated instances, tested the prophylactic powers of belladonna, but although redness and dryness of the throat, and a diffuse scarlet efflorescence were produced in the majority of the cases, we never found it, in any, to produce the slightest effect in mitigating the character, or preventing the occurrence of scarlatina. The experiments were made, during the prevalence of the disease, and, in numerous instances, the subjects of them were attacked. In one case, the efflorescence was kept up by the use of the belladonna, for forty-eight hours; in a week afterwards, this individual took the disease, in its most violent form, and died on the fourth day.

It has been asserted, that the scarlatina, like many other analogous diseases, may be innoculated so as to determine a local inflammation which has little reaction on the economy, but is preservative in the same manner as the vaccine virus against small-pox. (Miguel.) M. Miguel employs the matter procured by pricking several papilize with lancets, which is inserted in incisions made in the arm of the child, intended to be infected. In three cases, he was enabled in this manner, to produce a local disease, which followed the march of the scarlatinous inflammation.

Although not invariably successful, yet it will be prudent, in all cases, to prevent the spread of the disease by the seclusion of the sick, free ventilation, frequent changes of linen, and the strictest cleanliness.

3 .- Roseola .- Scarlet Rash.

Roseola consists in a rose coloured or scarlet efflorescence, without wheals or papillæ, not contagious, and sometimes accompanied by a sensation of tingling or itching. The efflorescence may be confined to the face, neck, and upper extremities, or it occasionally extends over the greater part of the body. In some cases, the redness is diffused

over a large surface; in others, it assumes the form of rings and spots, while, in others again, irregular lines of a darker colour have their interstices filled up by a lighter shade of red. The disease is frequently ushered in by a slight degree of febrile excitement, which abates as the efflorescence makes its appearance, and disappears with it. The pharynx often presents a similar efflorescence as that upon the skin, and the patient feels a sense of dryness and roughness in swallowing. The efflorescence upon the surface gradually declines, after the second day, and, in general, disappears by the fifth. It seldom continues longer than a week, and is not followed by a desquamation of the cuticle. It occasionally reappears, and declines again and again, without any perceptible cause, or in consequence of an undue excitement, or the use of heating food or drinks. (Willan.) The recession of the efflorescence is frequently attended by some derangement of the stomach, headache, and more or less of languor and lassitude, which immediately cease, upon the reappearance of the eruption. In a few instances, we have found the eruption attended by very decided catarrhal symptoms, and to be preceded and followed by pains of the limbs, and sometimes slight redness and tumefaction of the joints. The efflorescence often occurs in succession, on different parts of the body, and, if generally diffused in small patches, with intervals of sound skin between them, is sometimes, with difficulty, distinguished from measles, the difficulty being increased by the presence of catarrhal symptoms.

Roseola is peculiar to no age or sex; it is, however, much more frequent, during infancy and childhood, than subsequently. In infants, the peculiar irritability of the skin, and of the constitution, predisposes to its occurrence from the most trifling causes. It is most frequently observed, during the period of dentition, or in connection with the ordinary intestinal and febrile affections. But it may originate from slight irritations of the stomach or of the alimentary canal generally. It is more common during the summer and autumnal

seasons than at any other period of the year.

Roscola has been divided, by Willan and others, into several varieties, founded upon the age or season, at which it most generally prevails, and some slight difference in the appearance of the eruption. The division is more apt, however, to perplex and mislead than to

serve any useful purpose.

The affection is one of little or no importance, requiring, in many cases, no treatment; and in none any further interference than to relieve the bowels of any cause of irritation, by some gentle laxative, to moderate the tingling or itching sensation of the surface by the use of the tepid or warm bath, and to place the patient upon a mild, unirritating diet. When the disease becomes chronic, or returns several seasons in succession, and continues for many months, (Willan,) attention to the condition of the alimentary canal will be demanded, with sea bathing, and the use of the mineral acids.

We have deemed it necessary to notice the disease, in this place,

from the fact of its having been repeatedly mistaken for a mild attack of measles or scarlatina, and has given rise to some of the reported cases of a second attack of the latter diseases. So closely do some of the forms of roseola resemble measles, that it has been questioned whether it is not, in fact, a modification or variety of that disease, without catarrh; (Sydenham, Rayer;) and several writers have thought it necessary to devote distinct treatises, to determine the diagnosis between it, scarlatina, and measles; (Orlov. Seiler, Heim, Stromeyer;) we cannot suppose, that any difficulty can be experienced by an attentive observer, in readily distinguishing roseola from the other febrile exanthemata, as well by the difference in the appearance of the eruption—the patches of which are more regularly circular in shape, and more circumscribed than those of either measles or scarlatina, while they are larger than those of the former, and smaller than those of the latter: as by the general symptoms, which are very distinct, —the most careless would hardly confound the slight evanescent febrile excitement of roseola, with the severe catarrhal fever of measles, or the intense febrile reaction of scarlatina.

4.—Variola.—Small-pox.

This "loathsome malady," though no longer the same scourge of infancy, as it was previous to the discovery of vaccination, is still of sufficient frequency to demand a pretty close attention on the part of the practitioner. Notwithstanding the means for its entire extirpation is within the reach of every community, yet, from an almost criminal supineness upon the part of our legislative bodies, and ignorance and prejudice on the part of a large portion of the community, it is still allowed to prevail, destroying throughout the world many thousands annually, and stamping, with deformity, the countenances of those who are fortunate enough to pass through it without loss of life. Hence, the physician is obliged to make himself fully acquainted with its pathological character, and proper mode of treatment, for he knows not at what moment he may be called upon to watch its progress, and lend his aid to mitigate the sufferings it entails, and, if possible, prevent its destroying those to whom he has not been permitted to afford a certain protection against its attack.

The variola is an eruptive fever, marked by the occurrence of pustules over the entire surface of the body, which appear at a definite period, run a regular course, and upon separating, in the form of dry crusts, frequently leaving a deep and indelible cicatrix. It is propogated by contagion, but often prevails as an epidemic, the first cases being traceable to no focus of infection. As a general rule, to which the exceptions are comparatively rare, variola affects an individual

but once, during life.

Like other febrile affections, variola commences with chills, or rigors, succeeded by a febrile reaction of more or less intensity, which may continue for two or three days before the eruption upon the skin appears. These initiatory symptoms are often preceded, for many days, by a certain degree of langour or lassitude; the patient feels depressed; his nights are often restless, and his digestion somewhat This constitutes what has been termed the stage of incubation, the duration of which has been variously stated, as from one to two weeks; to fix its limits is, in most cases, however, impossible. It has been said, that the moment of infection, is often marked by some disagreeable sensation; as of giddiness, sickness, or an inward feeling of alarm and fright. We confess that we have seldom met with such instances. Frequently the infection remains for a long period, latent in the system; thus we have known an individual to remain in apparent health, in the midst of an epidemic of small-pox, by which nearly every unprotected person in the same dwelling and neighbourhood with himself were infected, but after the epidemic had entirely ceased, and no cases had occurred for weeks, to be then suddenly attacked with the disease in its most virulent form. Often the period of incubation is marked by no morbid symptoms, either of a general or local character; (Rayer;)—the first indication of infection being, a severe long-continued chill, or several slight attacks of rigor, occurring at short and irregular intervals, and speedily followed by a febrile reaction, often of considerable intensity, during which the pulse is quickened, the skin is hot and dry, or disposed to perspiration; the patient often complains of pain, or a sense of soreness in the limbs, and, generally, of severe pain, or a sense of weakness in the back. There is commonly pain in some part of the head, particularly in the temples and forchead. Children often exhibit a degree of drowsiness, and generally awake with a start, or in a state of alarm. There is generally considerable prostration of strength, and often an anxious suffering expression of countenance.

In some cases, early in the attack, there is great irritability of stomach; frequent vomiting; great oppression at the præcordium; and a pungent pain at the epigastrium, increased upon pressure. Not unfrequently, there occurs considerable difficulty of respiration, with

cough, wheezing, and other indications of bronchial disease.

Occasionally the reaction is slight and imperfect, or the disease commences with a state almost approaching to complete collapse: the surface of the body is pale, cold, and contracted; the pulse is feeble, and the countenance is anxious and contracted.

In children, the eruption is very frequently preceded by a severe

epileptic paroxysm.

Many of the foregoing symptoms may abate in violence, or entirely disappear, upon the occurrence of the cruption; while others con-

tinue, with greater or less intensity.

The eruption upon the skin usually occurs at the end of forty-eight hours, from the occurrence of the chill, pain in the back, or gastric distress. Occasionally, in weakly and delicate subjects, or from exhaustion, produced from loss of blood, long-continued vomiting, or severe purging, or from exposure to cold, the appearance of the erup-

tion is delayed;—its occurrence previous to the third day is extremely rare.

The eruption first appears upon the face, in the form of small red papulæ, elevated above the surface of the skin. Subsequently, similar papulæ occur on the neck and wrists, and then upon the trunk and thighs, and, finally, upon the feet. The eruption usually extends over the entire surface of the body, by the end of the first or second day; but, occasionally, it is not fully completed before three or four days. It is seldom that it occurs to the same extent over every portion of the surface:—it is generally most considerable about the folds of the joints, and such parts of the body as are kept permanently warm.

In some few instances, the eruption has been known to commence upon some part of the body, or the inferior extremities. Not unfrequently one or two papulæ appear about the face, and assume the vesicular form, previously to the occurrence of the general erup-

tion.

The papulæ are at first faint, but become more and more distinct, and by the end of the first day, they are of a decided red colour, and sensibly elevated; by the third day, a small vesicle forms upon each papula, filled with a thin transparent fluid, and surrounded with an inflamed circular margin. The vesicle soon becomes depressed in the centre, which continues until about the sixth day; but as the vesicle becomes more completely distended, and of a more globular form, this indentation disappears; the vesicle assumes a yellowish white, or pearly appearance, and instead of being filled as at first, with a transparent fluid, is now distended with a yellowish puriform matter, of the consistence of cream. When the pustules are numerous, the parts upon which they are situated swell much, and the surrounding skin is of a deep red colour, from the extension to it of the inflammation. The swelling is usually to the greatest extent in the face, hands and feet. About the seventh day, some of the pustules on the face burst, and upon the eighth or ninth, they begin to dry, and become converted into scabs, over the rest of the body;—the pustules becoming successively yellow, then brown, and, when perfectly dry, of a very dark brown, or almost black. The scab adheres for a few days, and then falls off, leaving, in general, especially upon the face, a deep pit, or depressed cicatrix. The skin usually remains, after the scab falls off, of a dark brown mottled appearance, and it is often many weeks, or even months, before it regains its natural hue.

From the appearance of each papula, to its complete maturation, generally occupies a period of seven days. But as the papulæ do not appear simultaneously upon every part of the surface, their maturation takes place successively;—thus, upon the face, they assume the pustular form, burst, and are converted into scabs, first; then those of the trunk and the upper extremities; and, finally, those of the lower extremities. As many as four or five days may intervene, between the complete maturation of those upon the face, and those upon the feet.

During the stage of maturation, there is emitted from the surface of the body, a sickly disgusting odour, which is peculiar to the disease.

When the eruption appears on the skin, there is generally more or less affection of the throat; it is mostly redder than natural, and, in severe cases, considerably inflamed, and covered with apthous ulcerations. These generally precede the eruption on the surface, and often disappear earlier than the latter. When the inflammation of the throat is extensive, the entire mucous membrane of the respiratory tubes, is very liable to be affected likewise. The more severe the case, the more extensive is the follicular inflammation of the fauces.

During the eruptive fever, the tongue is generally covered with a thin layer of white mucus; when the eruption is completed, this is partially removed, and, at its tip, a few eruptions usually appear. It is commonly moist, excepting when the patient is confined to a close and impure atmosphere, when it becomes dry and dark coloured.

As the maturation of the eruption becomes completed, the febrile symptoms, in general, subside or entirely disappear:—frequently, however, some degree of febrile excitement continues, until scabs are formed over the greater part of the surface. When the eruption is at its height, there is always more or less tenderness of the skin; which is so considerable sometimes, as to occasion great distress to the patient. Frequently there is considerable itching of the surface, which causes the patient, unless restrained, to scratch and rupture the vesicles, by which, generally, his suffering, as well as the danger of deformity, from deep, large, and irregular cicatrises, is increased. When the eruption is finished, there is, very commonly, some degree of salivation, in consequence of the affection of the mucous membrane of the mouth and fauces.

The bowels are generally constipated throughout the disease. Sometimes, however, they are affected with more or less diarrhoa; which occasionally results from some degree of inflammation of the ileum and colon.

The extent of the eruption is very various; in some cases, but a few papulæ appear, scattered over different parts of the body, that run their course, and are converted into pustules, which dry and fall off, without any further affection of the skin. In other cases, although the eruption occupies the greater portion of the surface, each pustule remains distinct and separate from the others;—while in other cases, again, they are very numerous, and so close together, as to run one into the other. The first two constitute the distinct small pox of medical writers, and the last the confluent. The violence of the disease is generally in proportion to the extent of the eruption upon the skin. In the confluent form, all the precursory symptoms are more severe; the eruptive fever is more intense; the difficulty of respiration and pain, and uneasiness at the epigastrium, greater; convulsions and delirium are more common than in the distinct form; there is also more danger from the intense inflammation by which it is attended,

of extensive sloughing, or ulceration of the skin; while, in general, the affection of the throat, and respiratory mucous membrane, is more extensive and more liable to give rise to troublesome and dangerous

complications.

There is still another form of small pox—the congestive; in which the reaction is incomplete or absent. The patient labours under symptoms of severe oppression, and great difficulty of respiration; his surface is cold, his pulse feeble; the eruption is slow in appearing, seldom very extensive, and when vesicles form, these are flat, flaccid,

and never properly mature.

We have remarked that the severity of the febrile symptoms during the stage of maturation, is always in proportion to the number of pustules. This is, also, in some degree influenced by the condition of the patient, and certain external circumstances. Thus, in persons of a healthy, but not plethoric, constitution, of a tranquil disposition, and temperate habits, occupying a large, cool, and well ventilated apartment, and subjected to a proper diet and regimen, the cruption, although extensive, may maturate with but a very moderate degree of fever; while, under opposite circumstances, even a less amount of cruption may be attended by severe fever, and other unfavourable symptoms.

Considerable attention has been paid, by several modern observers, to the structure, or anatomical characters of the variolous vesicle.

(Adams, Cruikshanks, Cragie, Petzholdt, Lutz, Gregory.)

The inflammed spot with which the eruption commences, is seated in the cutis vera. It commences at a central point, spreads by radiation on the surface, and penetrates to a greater or less depth in different cases. A substance of a pulpy consistence, forming a kind of pseudo-membranous layer, is secreted immediately beneath the epidermis, which it slightly elevates. The vesicle is celulated, or divided into numerous cavities, having for its floor the papillated structure of the cutis, elevated and marked with fissures and chinks, and, at the height of suppuration, is swelled and moist like a sponge. At the central point, the corion and epidermis adhere, causing the central depression on the surface of the vesicle. The lymph by which the cells are first distended, and subsequently the purulent matter, is furnished by vessels which shoot from the central point. The lymph distends, at first the sides of the vesicle, which it raises above the level of the surrounding skin; at length, with the more full distension of the vesicle, the central filamentous attachment is destroyed, and the central depression is no longer observed. The pustule now accuminates and, finally bursts, discharging a purulent matter, of a yellowish colour, and of the consistence of cream.

The inflammation of the cutis vera, is surrounded by a damask red areola, more or less vivid according to circumstances, and extending to some distance beyond the margin of the vesicle. (G. Gregory.)

In all the more violent forms of variola, there takes place between the ninth and eleventh days, an accession of febrile excitement. The heat of the skin is increased, the pulse becomes quicker, and the patient more thirsty and restless. This is the secondary fever of medical writers.

In many cases, the secondary fever is comparatively light and manageable; but in cases of confluent small-pox, it is generally marked by symptoms of very great violence, resulting from a renewed inflammatory affection of the skin, or the occurrence of inflammation of one or other of the internal organs. Thus, the chest, back, or extremities, may become covered with an efflorescence very similar to that of searlatina: - the tongue being at the same time morbidly red, and the throat red, swollen, and painful. In other eases, an erethematous eruption, sometimes passing into confirmed erysipelas, with extensive vesications, occurs upon the head, trunk, or extremities. In other instances, boils, abseesses, and carbuncles, form in the neek, axillæ, groins, elbows and thighs; or a gangrenous inflammation, attacks a large extent of the skin, especially of the legs and feet, and, in a few days, lays bare the subjacent bones and muscles; or it may attack the serotum and prepuce, and produce a rapid destruction of those parts. Diffuse cellular inflammation may occur in the scalp, or deep seated abscesses in various parts of the body; or the larger joints may become filled with purulent matter. The surface, and particularly the cellular membrane under the lower eyelids, is occupied with an eethymatous eruption, which gives rise to ulcers, that pour out a thin ichor, and heal with difficulty. (G. Gregory.)

Opthalmia is a very frequent accompaniment of the secondary fever, and is almost always coincident with abscesses, or extensive destruction of the surface in some distant part. It is of a very intense character, setting in, generally, about the tenth day, and rapidly involving in destruction, more or less complete, some one, or all the tissues of the eyeball. Sometimes it causes a sloughing of the cornea, followed by protrusion of the iris; sometimes thickening and opacity of the eornea; and sometimes the whole globe of the eye is violently inflammed, and converted into one immense protruding abscess. The inflammation is most generally confined to one eye. It is not produced, as many suppose, by pustules upon the cornea or conjunctiva; these may be traced just within the inner edge of the cyclids, but never beyond it.

(G. Gregory.)

The brain not unfrequently suffers. Children are observed to grind their teeth, and squint; by degrees, symptoms of cerebral inflammation are developed, and the patients die, either from eonvulsions, or in a state of coma. The same affection of the brain that follows the destruction of large portions of the skin by burns or scalds often occurs. The symptoms are severe—repeated rigors, followed by general tremors; low delirium; a quick, thready and tremulous pulse; a dry brown tongue; collapse of the features; cold extremities, sub-sultus tendinum, and death. (G. Gregory.)

The thoracic viscera are not unfrequently the seat of disease. Most generally inflammation of the pleura, both of the ribs and lungs,

occurs. Its course is, in general, very rapid, terminating in death, on the third or fourth day, or even earlier. The symptoms are, for the most part, very severe and unequivocal; in other cases they are less violent, presenting at first, the characters of pleurodyne or thoracic rheumatism; and frequently the disease is chronic and latent, and to be detected only by its physical signs. The substance of the lungs is occasionally affected with inflammation, and sometimes symptoms of croup occur.

The abdominal viscera are occasionally affected; either the peritoneum, particularly that portion investing the liver, is inflamed; or, more frequently, the mucous membrane of the ileum and colon, become the seat of inflammation, attended with tenderness of the abdomen, diarrhea, and red and apthous tongue. (Armstrong, Mackin-

tosh.)

In the predisposed, during the period of convalescence from an attack of small-pox, we have frequently strumous opthalmia, enlargement of the glands of the neck, which may terminate in suppuration, or continue in an indolent state for a long period. Severe, deep-seated otitis, or all the symptoms of incipient or confirmed phthisis. There is, in fact, nothing which is so liable to develope, in individuals of a strongly marked lymphatic temperament, affections of a scrophulous or tubercular character, as an attack of any of the severer forms of small-pox.

The confluent form of small-pox may present itself, accompanied with symptoms indicative of an adynamic condition of the system, or of more or less extensive engorgement of one or other of the internal viscera. This constitutes the malignant, petechial, typhoid, or con-

gestive variola of various authors.

In this form of the disease, the temperature of the surface is not above the natural standard; the pulse is slow, feeble and oppressed; the strength of the patient is greatly depressed; the respiration is weak and panting; the tongue becomes quickly dry and brown; the teeth covered with sordes; the countenance contracted and depressed, and of a leaden or tawny hue. At an early period, petechæ, or sub-cutaneous ecchymoses of large extent, or dark-coloured hæmorrhages, from the nose, mouth, stomach or bowels occur. The eye is often the seat, also, of extensive ecchymoses. The gums bleed upon the slightest touch, and often profusely. In some cases death takes place previously to the appearance of the eruption; in others, the eruption is pale or copper coloured, or dusky, with a leaden hue of the lips, and dark appearance of the When vesicles form, they are often filled with a dirty, turbid, red fluid, or there is an effusion of dark coloured blood in them, and there are often petechiæ scattered between them. (Armstrong.) This variety has been termed the black pock (variola nigra.) In many cases, no maturation of the vesicles takes place.

Very often, from the commencement of the attack, symptoms of extensive bronchial disease present themselves; there is then a feeble, inefficient cough; difficult and oppressed respiration; a leaden or

dusky hue of the lips and cheeks; great drowsiness; a suffering, anxious expression of countenance; a feeble, compressible pulse; coolness of the surface, and great prostration of strength; and the patient often dies in a state bordering on asphyxia. (Carmeihl.)

Delirium, or a degree of stupor, bordering upon coma, very frequently occurs; though in many cases of petechial small-pox, the mind

remains perfectly clear throughout. (G. Gregory.)

During the prevalence of epidemic small-pox, there frequently occur numerous cases of a febrile affection, marked by tenderness of the epigastrium; pain in the back and limbs; some degree of soreness of the throat; salivation; profuse perspiration, from which no relief results; and, not unfrequently, petechiæ. This has been denominated variolous fever, without eruption. This fever generally begins and ends at the same time with the variolous epidemic. (Sydenham, Burserius, Dehaen, Vogel, P. Frank, Foquet, Gatti, Hedlund, Carmeihl.) We have repeatedly met with such cases, as well in the unprotected, as in those who had been vaccinated, or who had previously had the small-pox. That the disease results from the same infection as the small-pox, we have no doubt:—how far it affords subsequent immunity from the latter, we have had no opportunity of judging.

A number of other varieties of small-pox, founded upon some slight modification in the form or distribution of the eruption, are described by medical writers; but as they are distinguished by no striking pathological characters, we have thought it unnecessary to present a

description of them.

The autopsical appearances, in fatal cases of small-pox, vary considerably, according to the period at which death has occurred, and the particular organs that have become affected in the course of the disease. The lesions peculiar to small-pox, exist chiefly in the skin and mucous membrane of the mouth, fauces, and respiratory tubes. In many instances, these are the only lesions that exist, excepting, perhaps, an overloaded state of the great venous trunks, and of the parieties and parenchyma of the internal organs, resulting, probably, from the impediment which the disease presents to the free performance

of the functions of the skin and lungs.

Very generally, excepting perhaps, upon the palms of the hands, and soles of the feet, at the base of each pock there exists a small depression or orifice, resulting from the rupture of the excretory duct of one of the cutaneous glands. Where the cutis is not occupied with pocks, it is loaded with a white puriform matter. At an early period of the disease, the undermost layers of the epidermis are in a softened state; at a later period the connection between the epidermis and cutis, is entirely destroyed. The cutaneous glands are invariably enlarged, and increased in vascularity, and their excretory ducts are often distended with the secretion of the glands. The epithelium of the tongue and mouth is much softened. The subjacent mucous membrane frequently exhibits erosions, varying in depth. The mucous follicles of the tongue and tonsils are greatly distended; their orifices being sufficiently wide to admit readily the introduction of a large

probe. When death takes place previously to the twelfth day, the mucous membrane of the larynx and trachea, is deeply injected with blood, and covered with a copious viscid secretion of a purulent or puriform fluid, of a grey or brownish colour. When this is removed, the membrane is found to be thickened, pulpy, and, in severe cases, black or sloughy. The surface of the epithelium exhibits, at an early stage of the disease, a number of dull, rounded spots, of the size of a lentil, produced by the exudation of a fluid beneath the epithelium. In the progress of the disease, this effusion becomes more copious, and raises the epithelium, which may then be stripped off, exposing the inflamed, sometimes ulcerated, mucous membrane. The ulcerations vary in number and depth, extending sometimes to the sub-mucous cellular tissue. The marks of disease in the trachea are not always uniformly diffused over its whole surface, though the epithelium may be easily separated, even in the unaffected parts. Disorganization of the bronchial mucous membrane, may be traced into the third series of branches. The esophagus has been found, in some instances, studded with minute elevations which have been described as pocks. (Petzholdt, G. Gregory.) By many writers, the mucous membrane of the intestinal canal is described as presenting numerous small circular ulcerations; by some these have been supposed to be true variolous pustules; (Mackintosh, Carmeihl;) others, however, (Wrisberg, Reil, Armstrong, G. Gregory,) with greater accuracy, regard them as enlarged or ulcerated follicles. (Cruvielheir.) Variolous vesicles have been seen upon the mucous membrane of the rectum, in cases of prolapsus; (Mackintosh;) and upon the granulations of the dura mater, in a case of fractured scull. (Batting.)

The indications of pulmonary inflammation are very frequent, and still more so, those of pleuritis, generally confined to one side, and accompanied with sero-purulent exudation. The brain and its membranes, frequently exhibit an overloaded state of their blood-vessels, and effusion of turbid serum between the membranes, and in the theca of the medulla spinalis. It has been stated that morbid appearances are very rarely detected in the mucous membrane of the alimentary canal; (G. Gregory;) our own observations, would lead us, however, to a very different conclusion. In the majority of the cases we have examined after death, diffused or follicular inflammation, ulceration, or softening of the mucous membrane of the stomach and duodenum, but more frequently of the lower portion of the ilium, and upper portion of the colon was observed. In the autopsies made at the small-pox hospital during the variolous epidemic which prevailed in Philadelphia, during the years 1823-24, in nearly every case, more or less disease of the stomach and upper portion of the small intestines was observed. (J. Bell, J. K. Mitchell.) Drs. Bell and Mitchell, in their report of the epidemic referred to, remarked that, "we cannot refuse our assent to the belief, that the mucous surface on which the preparatory process

of digestion takes place, is mainly affected," in small-pox.

In relation to the causes of small-pox, we possess little positive knowledge. That the disease may prevail epidemically, spreading

rapidly over large communities, and even over extensive districts of country, is a fact well established, and that the disease is capable of being propagated by contagion or infection, is equally certain. But whether, in any instance, it is possible for the small-pox to originate spontaneously, or to be produced by certain electric, or other conditions of the atmosphere, independent of a specific contagion emanating from the bodies of the sick, is a question which has excited very considerable dispute, and the settlement of which is attended with no little difficulty. And yet, its sudden occurrence in a vicinity where no cases of the disease had been observed for many years; its appearing simultaneously in distant parts of the same city, without the possibility of tracing it, in either, to an original source of infection, as was the case in the epidemic of 1823, the rapidity with which it spreads; its greater virulence when it prevails as an extensive epidemic, than under ordinary circumstances, as well as its sudden cessation, incline us to believe that small-pox may originate now, as it must have in

the first instance, solely from atmospherical causes.

During the entire course of the disease, there emanates from the body of a small-pox patient a contagion, which, by combining with the air of the chamber in which the patient is confined, renders the latter capable of infecting those who respire it. The contagion is capable, also, of attaching itself to the bed and its coverings, to the clothes of the patient, provided these be closely wrapped up and excluded from the atmosphere; and probably to the walls of the apartment, when free ventilation and a process of purification has not been resorted to; and in this manner will communicate the disease at a distance from the source of contagion, and after a considerable lapse of time. But free exposure to the air, and the ordinary means of purification, will very quickly destroy the infecting property. contagion of small pox may also be communicated by the matter of the pustules; or even the scabs, applied to the skin, or to the mucous membrane of the nose, or still more certainly, by its being applied to a wound, or abraision of the cuticle. The dry scab retains the contagious principle for a long period; experience has shown, that for a considerable time after death, the matter of the pustules continues energetic, and that the air may be infected by a confluent case of the disease, for at least ten or twelve days after death. (Hawkins.)

Small-pox may prevail at all seasons of the year, and attack alike individuals of both sexes, and of every age. According to our own observations, it is much more liable to occur during the colder months, than during the other portions of the year. In Philadelphia at least, the influence of the summer months in diminishing the frequency of the disease, is very apparent. (Stewardson.) Some pains have been taken in order to determine to what distance the contagious effluvium may extend beyond the individual from whose body it emanates; and it has been concluded, that in all cases its sphere of action is limited to the circumference of a few feet. (Hawkins.) We are inclined to believe that the distance differs under particular circum-

stances. Thus in close, foul, and unventilated apartments, every portion of the air appears to become charged with the contagion; so, also, in confined and narrow courts, lanes, and alleys, in which the air becomes stagnant and impure, the contagious miasm extends to a much greater distance than in situations differently circumstanced. Hence, in all epidemics, it is among the poorer classes, and in the least salubrious districts, that the disease prevails the most extensively and in its severest forms, when it occurs as an epidemic, and to which, under ordinary circumstances, it is almost exclusively confined.

Notwithstanding no period of life is exempt from the attack of small-pox, it is very evident that the great majority of its subjects are children. Some persons appear much more susceptible to the contagion of small-pox than others; but from what that susceptibility arises, it is impossible to say. In Philadelphia it has been observed that the blacks are peculiarly obnoxious to the disease, and that in them it is more fatal than in the whites; (Bell, Mitchell;) our own observations have confirmed the truth of this observation. In very severe epidemics, this difference of susceptibility is not, however, observed so generally, as in an ordinary occurrence of the disease. Under all circumstances, it has appeared to us that a neglect of personal cleanliness, habits of intemperance, and fear, or a timid, desponding state of mind, strongly predispose to attacks of small-pox.

The extent of the cruption upon the skin, and the intensity of the accompanying symptoms, are in no degree influenced by the character of the disease in the individual from whom the infection has been received; thus the contagion from a confluent case will often produce the small-pox in its mildest form, whilst infection from the latter may give rise to the disease in its confluent and most malignant character. The quantity of eruption is mainly determined by the state of the surface, at the period of its development; whatever has a tendency to augment the cuticular circulation, whether too much clothing, external heat, irritating substances directly applied to the surface, or stimulating food, drinks, or remedies, taken into the stomach, increases the extent of the eruption; while whatever has a tendency to reduce the determination of blood to the surface, as cold, a plain and abstemious diet, aqueous drinks, bleeding or purgation during the stage of incubation, diminishes the quantity of papulæ. A plethoric state of the body increases the intensity of the disease, and is mainly instrumental in occasioning cellular complication; (G. Gregory;) it also not unfrequently gives to the disease a character of decided malignancy. (Huxham.) Whatever has a tendency to impair the health and vigor of the system, and vitiate the blood, imparts also to the smallpox an adynamic and malignant character; and this is one of the chief causes of the prevalence of the worst form of the disease among the poor, ill-clothed, ill-lodged, badly fed, dissolute and intemperate classes of society.

There is observed, in many persons, and even in some of the

members of the same family, an undefinable constitutional tendency to suffer more severely than others from, and a greater liability to sink under, even slight attacks of this, as well as most other affections, while there are others, whose constitutions seem to react favourably under the severest forms of the disease, and to resist

successfully, their fatal tendency.

It is a curious circumstance, that while in one epidemic, nearly all the cases are distinct and mild, in another, they are almost all confluent and malignant. The modifying cause being evidently connected with some unappreciable morbid condition of the atmosphere. In South America, these epidemic varieties have been strikingly evinced; at one time, small-pox occurring as a mild and comparatively harmless affection; whilst at another, nearly all attacked fall victims to it. (Humboldt.)

A strong predisposition to disease of particular organs, as the brain, lungs, bowels, &c., or to scrophulous or tubercular affections, will give rise to serious complications in those attacked with small-pox,

alter in some degree its character, and increase its fatality.

The influence of vaccination, as a protective against small-pox,

will be considered hereafter.

Small-pox is unquestionably one of the most destructive diseases to which man is liable. Prior to the introduction of vaccination, the average mortality is usually stated to have been one in four of those attacked, or twenty-five per cent. At the London Small-pox Hospital, the average of twenty-five years gave thirty-two per cent. Gregory.) In Germany it is stated to be 20 per cent. (Heim.) Philadelphia, the average mortality, from 1786 to 1802, inclusive, was one in fourteen, nearly, or about 7.28 per cent. From the years 1807 to 1811, inclusive, variolous innoculation was still permitted, and extensively practised, and the deaths from small-pox were to the entire mortality of the city and suburbs, as one to twenty-five; or four per cent. In 1811, variolous innoculation was prohibited by an act of the legislature; during the succeeding four years, no death from small-pox occurred. From 1816 to 1841, the deaths from small-pox amounted to 1861; giving a relative mortality of one to sixty-six, or about 1.66 In England, prior to 1800, that is, before the period when vaccination influenced the results, the deaths by small-pox were to the total deaths, both in town and country, as 16 to 100. From the report of the Registrar General of England, it appears, that in 1837, there were only five diseases more fatal in England, than small-pox; and that the deaths throughout England and Wales, by that disorder, amount now, annually, to about 12000.

The greatest mortality from small-pox, in the unprotected, takes place in children between two and five years of age. It is computed that at Chester, (England,) during the latter part of the last century, one-half of the deaths in children below ten years of age, was due to small-pox. (Haygarth.) In Philadelphia, during the 35 years preceding 1840, 2491 deaths from small-pox occurred in persons of all

29

ages; of these 1374 occurred in children under 10 years of age, namely: under 1 year, 425; between 1 and 2, 262; between 2 and

5, 452; between 5 and 10, 235.

Death may take place at any period of the disease—even prior to the appearance of the eruption; or the disease may run its course, and death may then occur from some one of its ordinary sequelæ. Most commonly, however, a fatal termination is to be anticipated between the eighth and twelfth days from its invasion. In a table of 168 fatal cases of small-pox, given by Dr. Gregory, it appears that in 32 death took place between the third and seventh days; in 83 between the eighth and twentieth days; and in 16 between the twenty-second and thirty-eight days.

The danger from small-pox varies materially in different cases. Distinct small-pox is ordinarily a disease of no danger; and under a simple treatment, very generally terminates favourably. Confluent small-pox is always attended with danger, particularly when the confluence occurs about the head and face; in such cases, death often takes place suddenly and unexpectedly. In every attack the danger is in proportion to the amount of the eruption, and the accompanying affection of the throat and respiratory organs. As a general rule, liable, however, to some exceptions, when small-pox occurs as an epidemic of wide extent, it is more violent and fatal, and less under the control of remedies, than when but a few isolated cases make their appearance. In patients occupying large, comfortable apartments, or airy, healthy neighbourhoods, the disease is attended with much less danger than in those placed under opposite circumstances. In the cellars of London small-pox is almost invariably confluent and violent; while in garrets, especially in open streets where there is a free ventilation of air, it is often distinct, and generally more mild. (Armstrong.) A similar remark may be made in reference to Philadelphia. In individuals of a broken down constitution, or in whom the powers of life have been impaired by intemperate and licentious lives, previous sickness, or by exposure, bad food, and uncleanly habits, the disease is very apt to assume an adynamic, hæmorrhagic, or congestive character, and very generally terminates fatally. In persons of a plethoric habit, small-pox generally assumes an aggravated form, and is often fatal. A predisposition to scrophulous or tubercular disease, is very apt to render the sequelæ of small-pox particularly severe and unmanageable. When many patients are crowded together in a small space, even with the advantages of free ventilation, it always increases the malignancy of the disease, or endangers the occurrence of some fatal malady during the latter stages. The age of the patient has likewise a considerable influence in increasing or diminishing the danger of an attack of smallpox:—as we have already seen, the disease is much more fatal in children under ten years of age, than in the middle periods of life; the same is true, also, of persons advanced in years. The most favourable age, it is said by one of the most authoritative writers on

the disease, (G. Gregory,) for taking small-pox, is from the seventh to the fourteenth year, when the powers of life are in full vigor, without the risk of plethora. This does not, however, conform with our experience; we have met, almost invariably, with the mildest eases, and the smallest number of deaths, even in the more violent forms of the disease, between the ages of ten and twenty. In a table of 2465 cases, eopied from the official records of the Health Office, at Philadelphia, the ages at which the deaths took place are as follows:—

Under	one year			425	Betwe	en forty	and	fifty	124
Between	n one a	ind	two	262	66	fifty	66	sixty	41
66	two	66	five	452	46	sixty	66	seventy	14
66	five	66	ten	235	66	sevent	V "	hundred & ten	10
66	ten	66	twenty	170		•		-	-
6.6	twenty	7 66	thirty	460				Total 2	2465
44	thirty	66	forty	272					

The unfavourable symptoms in small-pox, therefore, are confluence. a flat, flaecid condition of the distinct vesicles, with a dark coloured areola; imperfeet, deficient, or excessive reaction; extensive disease of the throat and mouth, and early hoarseness of voice; a suffocating cough, and difficult, panting, laborious respiration; a dark appearance of the vesicles, from their being filled with a bloody fluid, peteehiæ, vibisces, and a hæmorrhagie tendency generally; prominent symptoms of adynamia; great nervous excitement, with a tendency to cerebral disease; fear and despondency on the part of the patient; great restlessness, particularly at night, and symptoms of extensive gastro-enterie disease. The favourable or unfavourable termination of the case will, of eourse, be greatly influenced by the period of the attack, at which a judicious plan of treatment is cominenced; and by the physician having it in his power to remove, at once, the patient from the influence of a foul and confined atmosphere and other injurious agencies.

The immediate eauses of death in small-pox are, a state of great depression or collapse occurring at the onset of the disease, the powers of life sinking at once, without an effort, or but an ineffectual one, to react:—after the seventh day, violent and extensive disease of the respiratory mucous membrane; during the period of secondary fever, the occurrence of cerebral effusion, pleurisy, pneumonia, laryngeo-tracheitis, gastro-enteritis, or extensive gangrene of the skin; at a still later period, death may occur from erysipelas, tubercular phthisis, effusion into the chest or brain; or it may arise from excessive exhaustion. Many, however, of these latter results, are to be attributed to mismanagement of the earlier stages, or to

imprudencies committed by the patient or his friends.

Although, as a general rule, an attack of small-pox protects the system from the influence of the disease throughout the remainder of life, yet, though the instances are comparatively rare, cases have occurred in which a second attack has taken place. We have ourselves met with several, and still more frequently with those in which

patients who had, at a former period, passed through the small-pox, suffered, during an epidemic of the latter, a pretty severe attack of variolous fever, without eruption. It has been remarked, that all the well authenticated cases of secondary small-pox, have been of persons who, in the first instance, had it severely. (Gilbert Blane.) In three-fourths of the cases which have fallen under our notice, the individuals were deeply pitted, and otherwise deformed by the first attack; in the remaining cases, there existed indubitable proofs of the previous attack, but not the same evidence of its severity. In one-third nearly of these secondary attacks, the disease was confluent, and terminated fatally. In no instance have we met with the recurrence of the disease, excepting in those in whom the attack, in the first instance, was spontaneous, and not from innoculation.

It is no unfrequent occurrence for a local effect to result from the application of variolous matter to the bodies of those who have already undergone small-pox. We have repeatedly seen well formed small-pox pustules upon the breast or arms of nurses who had the care of infants affected with the disease; in two instances there was marked

febrile excitement.

The treatment of small-pox naturally divides itself into that proper during the several periods of incubation, eruption, maturation, dessi-

cation, and convalescence.

As we are seldom able to determine the exact period of infection, we should act upon the supposition that every unprotected individual, who has been exposed to the contagion of small-pox, is already infected, and without alarming his fears, immediately subject him to a proper hygienic course of treatment, which will consist, chiefly, in a moderate, plain, and unirritating diet, aqueous drinks, a proper regulation of his bowels, a free exposure to a cool, fresh atmosphere, while the body is properly protected by clothing suited to the season of the year; avoidance of the night air, and of every species of undue excitement; and, whenever it is possible, removal from a confined and unhealthy dwelling or district, to one of an opposite character. The diet must of course be modified according to the state of health and constitution of each individual. The robust and plethoric should be confined to farinaceous articles and milk, in moderate quantities; while the feeble and delicate should be allowed a more nourishing, but equally unstimulating diet. In purgatives and emetics as prophylactics, we have no great faith:—if the bowels are costive, a brisk but mild purgative will be proper; or, if the stomach be overloaded with undigested food, an emetic will be demanded;—but neither is to be employed solely with reference to the possibility of an attack of small-pox. The tepid or warm bath—the one or other being used according as the temperature of the surface is sustained or depressed —will, in most cases, be advisable; it has a powerful influence in equalizing the circulation, and overcoming any tendency which may exist to local hyperæmia.

During the eruptive fever, we must be guided in our remedies by

the degree of reaction, and the presence or absence of indications of visceral disease. In the ordinary cases of distinct small-pox, the symptoms are generally mild, and demand but little interference on the part of the physician, beyond the administration of some mild purgative, to open the bowels freely, the direction of a mild, bland diet, and cooling drinks. The body of the patient, at the same time, being kept cool, by a free ventilation of the apartment he occupies, without, however, exposing him to the influence of a direct current of air; by letting him lie upon a hair mattress, and but lightly covered with bed-clothes. Sponging the surface of his body with tepid water, will generally be attended with good effect. The saline effervescing draught will be proper, if there be considerable heat and dryness of the skin. When intense pain in the head is complained of, leeches applied to the temples will afford great relief, and should not be neglected; in cases, also, attended with considerable pain and tenderness of the abdomen, leeches to this part will be demanded.

When, however, the febrile reaction is intense, with great heat of the surface, a tense, or full, labouring pulse, severe pain of the head, back, or epigastrium, great irritability of stomach, oppressed breathing, or other symptoms of local inflammation or hyperæmia, a much more energetic practice is demanded. Blood-letting, general and local, is here our most important remedy, and upon its prompt employment, to an extent commensurate with the violence of the symptoms recited, will mainly, if not entirely depend, the safety of the patient. Upon no subject connected with the treatment of disease, has there existed a greater discrepancy of opinion than in relation to the propriety of bleeding in cases of small-pox. By some it has been entirely condemned in every case, as a measure calculated to retard or prevent the eruption, to interfere with its regular progress, and to prevent its maturation. It has, however, received the sanction of many of the most distinguished practitioners, from the time of Sydenham to the present day, under the circumstances referred to. (Mead, Friend, Huxham, Rush, Currie, Armstrong, Mackintosh, G. Gregory, Bell, Mitchell.) It is only, however, for the reduction of excessive excitement, or the removal of local inflammation or hyperæmia, that bleeding is demanded in any case of small-pox. The extent to which blood-letting should be carried, must be decided by the violence of the symptoms which indicate its employment, and the effects of the remedy. In cases of congestive variola, in particular, the abstraction of blood should be performed with great caution, and with the finger upon the pulse; if the latter sinks, the operation should be at once suspended; if it becomes fuller and stronger, the blood may be allowed to flow, but never to the extent of inducing an approach to syncope. In the more malignant forms of the disease, attended from the onset with evident depression of the vital powers, bleeding should never be resorted to; mild aperients may, however, be demanded, and free exposure to the fresh air, without exposing the patient, or allowing his body to become chilled. The warm bath will, in many cases, prove a valuable remedy; and if there be evidences of a rapid sinking of the patient's strength, even diffusible stimulants, as warm wine whey, warm wine and water, ammonia and camphor will be demanded. They must, however, be administered with caution, and their effects carefully watched:—if, under their use, the skin becomes hot and dry, the tongue parched, and the pulse quick and frequent, they should be discontinued.

In those cases in which bleeding is indicated, the bowels should be kept open, every day, by the occasional administration of some mild purgative, and the diet should consist exclusively of thin water gruel, with cool toast water, gently acidulated, for drink. In regard to ventilation, tepid sponging, &c., the same remarks will apply, as in

the mild, distinct form.

In all the more severe cases of small-pox, the hair should be cut close; this diminishes the amount of eruption about the scalp, the tendency to cellular inflammation of this part, to inflammation of the eyes, to cerebral disease, or violent delirium, while, at the same time,

cleanliness is the better secured.

During the stage of maturation, in mild cases, and when the eruption is perfectly distinct, we have little to do beyond keeping the patient cool, his apartment perfectly clean, and well ventilated, and his bowels regular, by gentle purgatives; confining him to a spare, unstimulating diet; allowing him the free use of cool, aqueous drinks; keeping him perfectly quiet, and his body and mind free from exertion or excitement. Should there be much heat and dryness of the skin, with a sharp, active pulse, the infusion of senna with the addition of the sulphate of magnesia, the compound powder of jalap, or magnesia and rhubarb, should be administered in such doses and intervals, as to produce free purgation, without however, irritating the bowels, or reducing, too rapidly, the strength of the patient:—while a free state of the bowels is all important in these cases, very active purging is to be avoided. When the saline cathartics produce griping pains, and repeated watery stools, ealomel combined with magnesia, and followed by castor oil, should be substituted, or the calomel may be combined with the compound extract of colocynth. Although calomel has been condemned after the appearance of the eruption, (Armstrong,) we believe that, in many cases, it is one of the best purgatives we can employ; it is sufficiently mild in its operation, and would appear to possess pecular powers in moderating the violence of the disease. (Mead, Boerhaave, Rush, Currie, Eberle.) Saline draughts in a state of effervescence, or the liquor ammoniae acetatis, may be administered at short intervals; or, in cases unattended with gastrointestinal disease, small doses of nitre and tartarized antimony, the sweet spirits of nitre with antimonial wine, or a combination of hydrochloride of ammonia and ipecacuanha, will be found to assist in moderating the violence of febrile excitement.

*R.—Pulv. hydrochlor. ammoniæ, gr. xxxvj-xlviij..

"Ipecacuanhæ, gr. iij.

"Sacchar. pur. ðj.—M. f. ch. No. xij.
Onc to be given every three hours.

When there exists considerable pain of the throat, with difficulty of swallowing, leeches should be applied to the neck, and if necessary, their bleeding encouraged by fomentations with warm water. When there is great difficulty of breathing, cough, copious expectoration of mucus or muco-purulent matter, and other indications of inflammation of the bronchii or lungs, provided there is no sinking of the pulse or symptoms of great exhaustion present, blood should be taken from the arm, to an extent sufficient to control the local disease; subsequently the citrate of potassa, with the addition of antimonial wine, may be administered; and if the cough continues to harrass the patient, and prevents his sleeping at night, an opiate administered in the evening, will generally afford relief. Either of the following may be given.^b

*R.—Mucilage g. acaciæ. Ziij.
Syrup. scille, Zj.
Spir. nitr. æth. Ziij.
Vin. ipecae. Zj.
Tinc. opii. camph. Zj.—M.

Tinc. opii. camph. Jj.—M.
Dose, a tea spoonful every two or three

Or R.—Pulv. ipecac, gr. iij.

Magnesiæ calc. gr. xxxvj

Ext. hyosciami, gr. vi.—viii.—M.

f. ch. No. xij.

One to be given every two or three hours.

Or R.—Vin. antimon. M x.
Spir. wth. nitr. M xv.
Tinc. opii. camph. M'xv.
Syrup. simpl. 3ss.—M.
For a dose.

When symptoms present themselves indicative of ccrebral disease; as intense pain of the head, flushing of the face, an injected state of the eyes, delirium, and violent pulsation of the carotid and temporal arteries, blood should be drawn from the arm, leeches or cups applied to the temples and nape of the neck, and the bowels freely purged, by some active cathartic, as calomel and jalap, or calomel followed by castor oil, infusion of senna, &c.; when the surface is very tender and painful to the touch, cooling lotions should be applied, or a few leeches upon the parts where the inflammation is the most intense. Inflammation of the eyes should be treated by leeches, active purgatives, and emollient lotions.

In some cases the eruption does not come out freely, and the patient is affected with great irritability of stomach, frequent vomiting, a feeling of great oppression at the præcordia, and a small, feeble pulse; the warm bath, warm pediluvia, or hot bottles to the feet, with sinapisms to the epigastrium and extremities, and purgative injections, will generally relieve these symptoms, and bring out the eruption upon the skin. If any symptoms exist indicative of a congested state of either of the internal organs, the cautious employment of blood-

letting, will frequently be productive of the best effects.

In malignant cases, with a flaccid, dark condition of the vesicles,

petechiæ, hæmorrhages, a livid complexion, coldness of the extremities, and evident exhaustion, the treatment must be regulated according to the urgency of the symptoms in each case. The utmost attention should be paid to ensure a free ventilation of the apartment occupied by the patient, at the same time that his body is kept warm: -his bowels should be kept gently open by mild aperients, or simple enemata. In the petechial and hæmorrhagic cases, the vegetable and mineral acids have been highly recommended, but particularly the sulphuric, the chloric and the hydrochloric, and the juice of lemons; these may be given freely, diluted with water, or in combination with the decoction of bark or solution of quinia; when, however, there is a tendency to a rapid failure of the powers of life, diffusible stimulants will be demanded; the mildest should be first tried, and if they fail, recource should be had to those of greater power; thus, warm wine whey, warm wine and water, ammonia and camphor should be first administered, and if stronger stimulants are required, milk punch, port wine, or brandy, may then be given. They should all, however, be used with caution, and in doses proportioned to the condition of the patient. Their effects are to be carefully watched, and if they augment the heat of the surface, quicken the pulse, and render the tongue dry, or bring on a state of deep stupor or coma, their use should be abandoned.

Various plans have been resorted to, during the stage of maturation, to prevent pitting, and the permanent deformity thence resulting. It has been asserted that if the pustules be opened on the first or second day of their appearance, and touched with a pointed pencil of nitrate of silver, they will be wholly destroyed, and leave no marks. (Velpeau, Meyreux.) The most effectual means, however, for obtaining this desirable result, is that of keeping the patient in a dark apartment, or covering his face with a linen mask, smeared on its inner surface with mercurial ointment. (Löwenhardt, Briquet, Gariel, Stewardson.) Dr. Stewardson, who has charge of the Small-pox Hospital at Bush-hill, instituted a number of experiments to test the effects of this practice, from the result of which, he remarks, it seems pretty evident that the mercurial ointment has a decided influence upon the small-pox pustules, preventing more or less completely their perfect maturation, and diminishing the concomitant swelling and soreness, the process of dessication being completed without the formation of thick scabs, and the resulting cicatrices being less marked than when the process of suppuration is left to pursue its natural course. It is, also, apparent, that this influence is chiefly observable in cases where the eruption has not advanced beyond the third or fourth day. Dr. Stewardson ascertained, by comparative trials, that the same results do not happen when simple cerate is used instead of the mercurial

It has been proposed to pencil the eruption with a strong solution of nitrate of silver, 15 to 45 grains to the ounce of distilled water, previous to its assuming the pustular form; (Serres, Olliffe;) or to employ

frictions with sulphur ointment, made of a drachm and a half to two drachms, to an ounce of lard, over the parts covered with pustules. (Midavaine.) The favourable results of either practice require con-

firmation from a more extended series of observations.

The period of dessication in the milder forms of small-pox, requires no particular treatment, the bowels of the patient should be kept regularly open by mild aperients; his diet should be gradually rendered more nourishing, care being taken, however, that it be composed of articles of ready digestion, and not too stimulating, and that the most trifling excess be not committed; the same rules being observed until complete convalescence ensue. During the period of convalescence, the daily use of the warm bath will be advisable.

When secondary fever ensues, it must be treated on general principles, and according to the nature of the complications with which it is accompanied. Violent excitement should be reduced by low diet. cool acidulated drinks, free ventilation, purgatives, and the saline diaphoretics with minute doses of antimony, when not contra-indicated by the condition of the digestive mucous membrane. occurrence of local disease will demand the use of the remedies appropriate to the character and extent of the latter; while a state of Positive advnamia, will demand the cautious employment of stimulants and tonics. The same remarks will equally apply to the various sequelæ of small-pox; in regard to the character of the remedies employed, and the extent to which they are to be carried, due attention must be paid to the greater or less degree of exhaustion, resulting from the preceding disease:—for though in many of the affections which occasionally occur subsequent to small-pox, depletion by the lancet, by cups or leeches, or by purgatives will be demanded, yet we are seldom able to employ it with the same freedom we would in similar forms of disease, occurring under any other circumstances.

When the attack of small-pox has produced symptoms of scrophulous disease, although, in some instances, sarsaparilla, mild mercurial alteratives, or perhaps some of the preparations of iodine, may be found serviceable;—a prudent hygienic course of treatment, is the one most to be relied on; a change of air; appropriate clothing; a well regulated diet, and daily exercise, proportioned to the strength of the patient; the warm bath, or sponging with tepid salt and water, followed by frictions to the surface, will frequently improve the digestion, invigorate the capillaries of the surface, render the functions of hæmatosis and nutrition more regular and perfect, and remove the danger of extensive disease of the glands, lungs, and serous membranes.

As a means of rendering the small-pox milder and more manageable, and in this manner decreasing its mortality, the innoculation of the disease, had been practised by some of the nations of the East, probably for a considerable period before the practice became known to Europeans. It was not until the beginning of the year 1721, that it was introduced into England, by the energy and perseverence of the celebrated Lady Mary Wortley Montague, whose husband had been English ambassador at Constantinople. In June of the same year, it was introduced into America, by the Rev. Cotton Mather, under the directions of Dr. Boylston, of Boston. Innoculation was unquestionably a most valuable discovery, and had the effect, when it came to be extensively practiced, of disarming the disease of some of its most frightful features, and of sensibly diminishing its ravages. At the same time, however, it had a tendency to perpetuate the small-pox, and by multiplying foci of contagion, to render the disease, which had previously only occurred at intervals, a frequent epidemic. Happily, the subsequent, and far more important discovery of Jenner, has rendered a resort to innoculation unnecessary, as a means of protection from the infection of small-pox, and as, in most of the states, the performance of innoculation is prohibited by law, while there appears no just grounds for believing that the necessity will ever occur for its revival, we may dismiss the subject, without any more extended notice.

5.—Vaccination.

It was long known, in the principal dairy counties of England, that cows are subject to a pustular eruption; and it was the popular belief in those counties, that when this was communicated to the hands of milkers, it rendered them, ever after, insusceptible of the variolous infection. To this circumstance, the attention of Dr. Edward Jenner became directed very early in life. In 1796, he made successful experiments with the matter obtained from the cow, and found that on those whom he had infected with this matter, the variolous innoculation took no effect. It was not until two years subsequently, that he published the result of his investigations. Public attention became at once awakened to the subject; and although the introduction of vaccination was at first violently opposed in different quarters, it was hailed, very generally, as a means of certain security against a loathsome and dreaded disease, and as one that would ultimately result in annihilating one of the most dreadful scourges of the human species. The knowledge and practice of vaccination spread rapidly throughout Europe and America; and there is now no civilized nation on the earth, by whom it has not been adopted.

In regard to the origin and nature of the vaccine disease in the cow, numerous opinions have been expressed. Jenner at first ascribed its sourse to the grease, a disease which affects the feet of horses, and which is communicated to the udder of the cow, by the hands of the milkers and farm servants. It has been asserted, that a pustular disease, in every repect similar to the vaccine affection, may be produced in the human subject, as well as in the cow, by innoculation with the matter of grease. (Friese, Loy, Sacco, Ring, Rankin.) Sheep are likewise subject to a pustular disease about the head and mouth, which, it is said, when communicated to the human system, affords security against the small-pox. (Sacco, Richter, Paulo.) It has like-

wise been asserted, that the innoculation of sheep with variolous matter, effectually protects them from the pustular disease just alluded to.

(Lisa.)

Jenner, on the first announcement of his discovery, advanced the opinion, that cow-pox, (or the variola vaccina, as he termed it,) and small pox, are identical in their nature,—vaccination being only a milder form of innoculated small-pox; and this opinion he ever after maintained. And its correctness would appear to be confirmed by the well established fact, that when variolous matter is inserted in the udder of the cow, it produces in it an affection identical in all respects, with the cow-pox, and which, communicated to the human subject, affords him the same protection against the variolous infection. was early noticed; (Gassner;) but for its full establishment, we are chiefly indebted to recent experiments. (Theile, of Russia, 1836-38; Ceely, of London, 1839; Martin, of Massachusetts, performed 1835, published 1841; Reiter and Gassner, previously to 1830.)

In his first publication, Jenner announced his conviction, that the

cow-pox, when it has once passed in a perfect form through the human body, leaves the constitution forever after secure from the infection of small-pox; and this was the opinion generally entertained by the physicians of Europe and America, until the year 1818, during which, and the succeeding year, an epidemic small-pox pervaded Scotland, and many persons who had been vaccinated, passed through a mild form of the disease; the same occurred in the subsequent epidemics of small-pox which prevailed in various parts of Europe, America, and the East Indies; and in not a few instances, very violent attacks of the disease, in its most unmitigated forms, and of a fatal termination, were reported to have occurred in those who had

been previously successfully vaccinated.

These facts have very forcibly directed the attention of the profession to a close investigation of the extent of the protection afforded by the vaccine infection. And although the result of this investigation has, it is believed, shaken the confidence of some in its prophylactic value, the majority, while their views in relation to vaccination have been slightly modified, still believe that, when the system has been placed fully under the influence of the vaccine virus, it is completely protected, in the greater number of cases, against a subsequent attack of small-pox; and, that, even in those, to whom it has failed to a fford this complete protection, the small-pox, when it does occur, is so modified in its character, as to become a disease of little severity, and seldom, if ever, fatal.

The most accurate series of observations in relation to the protective powers of vaccination, have been recorded during the few past years, by physicians in different parts of the world, possessing opportunities particularly favourable for their prosecution; all of which, fully bear out this latter estimate of the value of vaccination.

If, it is said, a comparison be drawn between the deaths from small-pox in the city of Amsterdam, before vaccination was introduced, during the period when it was but partially practiced, and after its full introduction, the balance in favour of vaccination will be found to be very considerable. Thus, dividing the thirty years, from 1784 to 1815, inclusive, into three eras, we find, that during the first era, from 1784 to 1795—that is, before vaccination was introduced, 6,304 persons died in Amsterdam from small-pox. In the second era, from 1794 to 1805, that is, before vaccination began to be generally practised, 5,446 deaths occurred from small-pox. In the third era, from 1804 to 1815, after the full introduction of vaccination, but 2533 died from small-pox; while, during the period of ten years, from 1810 to 1821, only 1,498 deaths from small-pox are reported. (*Nieuwenhuys*.)

In the years 1823-24, the small-pox prevailed epidemically in the city of Philadelphia; of the 248 cases of the disease treated at the Small-pox Hospital, 155 occurred in unprotected individuals; 64 in the vaccinated; 9 in the innoculated; 7 in those who had previously had small-pox; and 13 in those in regard to whom it was unknown whether they had been vaccinated or not. The whole number of deaths was 92: namely, in the unprotected, 85, or upwards of 54 per cent.; in the vaccinated, one; in the innoculated, 3; in those who had previously had small-pox, 3; and in those whose condition was unknown, none. (Mitchell and Bell.)

Of 234,959 persons subjected to vaccination in Holstein, from the years 1801 to 1822, only *two* individuals had been affected with smallpox, as late as the year 1824; while during the same period, only *one* person had been attacked by modified small-pox, out of 447,605, who had been vaccinated in the kingdom of Denmark. (*Lüder*.)

During the epidemic small-pox, which prevailed in the department of the Lower Rhine, during the years 1825-26, it is remarked, that by far the greater proportion of those who took the disease, were persons who had never been vaccinated, or in whom vaccination had not succeeded; and that when the disease attacked those who had been previously vaccinated successfully, it was invariably mild, and not unlike to varicella. (Lobstein, of Strasbourg.)

During the epidemic small-pox which prevailed in Copenhagen, from 1825 to 1827, 428 individuals who had been vaccinated, were attacked with the disease; in 26 of these it exhibited all the marks of genuine variola, and *two* of the number died. Among the unvaccinated, the deaths from small-pox amounted to 20 per cent. of those

attacked. (Wendt.)

The Committee of the Medical Society, (E. J. Coxe, Condie, C. D. Meigs,) appointed to investigate the facts connected with the epidemic small-pox which prevailed in Philadelphia, during the year 1827, after a full examination of the facts contained in the reports made to them, by all the practitioners of the city and county, remark, that no case of small-pox had occurred in Philadelphia, from 1812 to 1822, inclusive; that among 80,000 vaccinated individuals, but ten cases of death are reported to have occurred, in 1827, from small-pox; while, among a population of 60,000, one-third of which had been innocu-

lated, or had previously been affected with small-pox, there occurred 100 deaths from small-pox, nine of which were ascertained to be from a second attack of variola; of the ten cases of death reported to be from small-pox after vaccination, the committee trace nine to causes totally unconnected with that disease, or find them to have occurred in those, of whose perfect vaccination, there was no positive evidence; leaving but one well ascertained death from small-pox after

vaccination, among 80,000 vaccinated persons.

From December, 1831, to the middle of the year 1833, 90 cases of genuine small-pox were admitted into the General Hospital, at Breslau: of these, three occurred in persons previously vaccinated; nine in those in whom the vaccination was very doubtful; and 78 in individuals who had never been vaccinated. Forty-eight of the cases proved fatal; one among the vaccinated; five among those whose vaccination was doubtful, and forty-two among the unvaccinated. There occurred, also, during the same period, 146 cases of varioloid; 137 in persons previously well vaccinated; 9 in persons whose vaccination was doubtful:—only two of the entire number proved fatal; both of which occurred in individuals, whose previous vaccination was doubtful. 210 cases of varicella likewise occurred; 208 in persons who had been well vaccinated, and two in those whose vaccination was doubtful. In all, the patients recovered. (Ebers.)

During the epidemic small-pox which prevailed during the year 1833, in the district of Albignasego, in Italy, it is stated by the medical superintendent of the district, that none of the vaccinated patients who were attacked with the disease, died; and that, with the exception of a single case, the symptoms they exhibited were those rather of a varicellous affection than of genuine small-pox. (Festler.)

While the epidemic small-pox prevailed at Naples, in 1834, 7000 persons were attacked, of whom 1450, or nearly 20 per cent. died. Persons of all ages who had been effectually vaccinated, escaped very generally the infection; many of these, however, were attacked with varicella, some with febrile pemphigus, and others with miliaria, urticaria, or other eruptive diseases; but not a single one exhibited the

genuine variolous disease. (Ronchi.)

At the hospital, in Vienna, there occurred during the year 1835, 469 cases of genuine variola, and 533 of varicella. Of the 469 cases of small-pox, 160 were in persons who had not been vaccinated, 109 in those whose vaccination was doubtful, and 200 in individuals, whose arms presented a well marked cicatrix. Of the 160 unvaccinated, 82, or rather more than half, died; of the 109 doubtful, 40 died, and of the 200 fully protected, 25, or one-eighth, died. In six of these, the fatal issue seemed to be owing to the putrid character of the accompanying fever, and in 9, the disease occurred in puerperal females, and appeared to be associated with child bed fever. Of the 533 cases of varicella, three only terminated fatally, all of which were in puerperal women.

In the report made to the Royal Academy of Medicine of Paris, it is

stated, that, from the communications received from 41 departments, it was ascertained, that 365 cases of small-pox only, had occurred after ascertained vaccination, of which number 8 had terminated fatally. (Villeneuve.)

Between the years 1831 and 1836, there occurred, in Wirtemberg, 1055 cases of small-pox after vaccination, of which 75, or about 7

per cent. proved fatal. (Heim.)

There were admitted, into the London Hospital, between 1835 and 1840 inclusive, 868 cases of small-pox after vaccination, of which 61

died, or nearly 7 per cent. (G. Gregory.)

The vaccine committee of France, in their report for 1839, state, as deductions from all the facts collected by them, that the immense majority of the vaccinated, though in immediate contact with those who were suffering from small-pox, both in its sporadic and epidemic forms, remained unaffected; that vaccination has unquestionably continued, in the epidemics of small-pox which have occurred in different departments of France, to possess the power of arresting the evil,

by reducing genuine variola to varioloid.

During 1840, 14,470 persons were attacked, in France, with epidemic variola, of whom 1668 died; in 24 cases, small-pox occurred in those who had previously passed through the disease, and three of these died. Of 406 persons attacked with small-pox after vaccination, only six died. The following are presented, as the conclusions deducible from the facts contained in the report: First. The regular vaccine infection is a preservative against small-pox; the protection, however, is not absolute, a small number of those vaccinated being subject to an eruptive disease, commonly known by the name of varioloid. Secondly. The latter disease is generally mild, and free from danger, destroying but 1 in 100, while the mortality of small-pox, among the unprotected, was 1 in $8\frac{1}{2}$. (De Claubry.)

In a petition presented, a few years since, to the Parliament of England, by the Provincial Medical Association of Great Britian, consisting of nearly 1200 members, is contained the following very import-

ant statement:

"Your petitioners have learned, by the concurrent testimony of a very large portion of their fellow members, that the cow-pox, if duly and carefully communicated, has an enduring influence in protecting the constitution from small-pox; that, while they admit, that this protection is not, in all cases, complete, they have unquestionable proof of its being capable, if generally and properly employed, of mitigating, controlling, and, they might almost say, of extinguishing small-pox, in any district of country."

Various opinions have been advanced as to the cause why, that in certain cases, vaccination fails to afford protection against the infection of small-pox. By some, it has been ascribed to a gradual deterioration of the vaccine virus, in consequence of its transmission from person to person, and they strongly urge the necessity of recurring, at short intervals, to the cow, for fresh matter, in order to secure its

complete prophylactic powers. That, in some instances, spurious matter may have been employed, and, in others, that which had undergone some change capable of impairing its protective influence, and that the infection resulting from such spurious or deteriorated matter may have been mistaken, by ignorant, careless, or inexperienced practitioners, for genuine vaccination, there can be little doubt; but that the vaccine matter, in general use, has become, in any degree, deteriorated, would seem to be disproved by the fact, that the appearance of the vesicle produced by it—the period of its incubation—its progress, and the distinctive characteristics of its successive stages, are precisely the same as those obtained from the use of matter more recently derived from the cow.

The Royal Jennerian Institution of London, employs now the same matter that has been in use, since the year 1806, when the institution was founded, and according to its authority, matter recently obtained from the cow does not produce a vesicle, in any degree, inferior to

that produced by the old matter.

It is declared by the chief of the Vaccine Institution at Turin, (Dr. Griva,) that no perceptible differences are to be traced between the characteristics and progress of the vesicle produced by the old and the new, the primative, and the humanized virus.

In Germany, according to Dr. Heim of Wirtemberg, the opinion of the superior efficacy of matter recently obtained from the cow, is

not generally entertained.

It is proper, however, to state, on the other hand, that, in 1837, the Small-pox Hospital of London, changed its old stock of matter, for that which was more recent, and that a marked improvement was perceptible in the resulting vesicles. The local inflammation was more severe; the constitutional symptoms were more violent; the virus was more energetic; the most minute incisions took effect, and the lymph given out on the ninth and tenth days, was still in an active state.

The national vaccine establishment of England has, also, on seve-

ral occasions, varied their stock of matter, with advantage.

In France, a new variety of vaccine matter, obtained from the dairies of Passy, near Paris, was brought into use, in 1836, and is considered, by many, as superior to the old stock. In 1838, Mr. Estlin, of Bristol, England, opened a new source of lymph from a dairy, in that neighbourhood. It has been found, it is said, very energetic, and is now employed, in many parts of England, in preference to the matter of the national vaccine institution; (G. Gregory;) we may add, that, for some years past, we have been in the habit of using vaccine matter recently obtained from the cow, supplied to us by a friend in Europe, and it has appeared to us, to be much more energetic and efficient than that in common use in this city.

By many physicians, of great respectability, it has been supposed, that the protective powers of the vaccine infection become gradually impaired, as the individuals who have been subjected to its influence,

advance in age, until, finally, they become anew, susceptible to the contagion of small-pox. Brown, of Edinburgh, Gregory, of London, Mohl, of Copenhagen, Heim, of Wirtemberg, and some few of the physicians of this country, advocate this opinion; all of whom insist upon the necessity of re-vaccination as a means of restoring to the

system its immunity from variolous infection.

We have collated with no little care, the leading facts which bear, either directly or indirectly upon this question, especially those recorded, during the last ten years; all of which, in our opinion, very fully sustain the position of Jenner, that, in every instance in which the system can be fully infected with the vaccine disease, it affords a protection against the occurrence of small-pox, which is unimpaired with the lapse of time. The question, as to the propriety and advantage of re-vaccination is, nevertheless, a very important one. That, among a given number of those who have been apparently successfully vaccinated, there will be found a number, in whom, from some cause, not well ascertained, a greater or less degree of susceptibility to variolous infection is left unextinguished, and which augments in time, is a fact that would appear to be well established; and such individuals will be found to be, also, susceptible to re-infection by the vaccine virus. Now, the question presents itself, Will it be possible, by subjecting these individuals to re-vaccination, to protect them from an attack of small-pox? In order to test this question, re-vaccination has, for some years past, been very extensively practised, in many parts of Europe, and the results obtained thus far, are curious and interesting. To present all the details connected with the practice of re-vaccination, would occupy more space than we can conveniently spare; we shall, therefore, merely present the following tables; the first, presenting the re-vaccinations performed in the Prussian army, so far as the reports have reached us; the second, the whole number of re-vaccinations upon record, with their general results; the third, indicating the appearance of the arm in those submitted to re-vaccination; and the fourth, presenting the results of a series of second revaccinations.

TABLE I.

	Number re-vaccinated.	Failed.	Imperfect.	Successful.
1831	8,804	5,525		3,279
1832 .	7,176	3,047		4,129
1833	48,478	33,209		16,679
1834 .	44,454	15,488	12,287	18,136
1835	39,192	23,877		15,269
1836 .	42,124	14,048	9,940	15,315
1837	47,258	15,393	10,557	21,308
1838 .	42,041	14,252	8,672	19,117
1841	44,941	13,523	8,635	13,523
Totals,	324,468	138,362	50,091	126,755

TABLE II.

	Number re-vaccin- ated.	Failures.	Spurious or imperfect.	Successful.
Dr. Otto, Germany, 1829	189	159	9	21
- Heim, Wirtemberg, Army, 1829-33	4,802	.1,724	1,870	1,208
Prussian Army, 1831	8,804	5,525	-,	3,279
, , 1832	7,176	3,047		4,129
,, ,, 1833	48,478	33,209		15,269
,, ,, 1834	44,454	15,488	12,287	16,679
,, ,, 1835	39,192	23,877		15,315
,, ,, 1836	42,124	14,048	9,940	18,136
,, ,, 1837	47,258	15,393	10,557	21,308
,, 1838	42,041	14,252	8,672	19,117
,, ,, 1841	44,941	13,523	8,635	13,523
Dr. Festler, Italy, 1832	60	40		20
,, Wendt, Copenhagen, 1832	3,964	1,208		2,756
" Lurott, Bischwiller, 1832	86	43	31	12
" Aggens, Silesia, 1836	962	72	68	822
Vaccine Committee, France, 1839 .	6,652	4,651	1,283	718
,, ,, 1840 .	2,214	1,717	227	270
,, M. Villeneuve .	2,199	1,976		223
Dr. Forry, Fort Wood, N. Y. 1840 .	560	364	55	141
"Kirkbride, Philadelphia, 1840.	209	165		44
M. Bosquet, Paris	90	53		37
Deaf and Dumb Institution, Paris .	128	93	20	15
Total,	346,583	150,627	53,654	133,042

TABLE III.

	Number vaccinated.	Of these had perfect cicatrices.	Imperfect cicatrices.	No cicatrices.	Re-vaccination successful in
1834	41,451 42,124 47,258 42,041 44,941 220,818	33,634 32,635 37,299 33,819 36,182	7,134 6,543 6,903 5,645 6,193	3,686 2,946 3,056 2,577 2,567	18,136 15,315 21,308 19,117 13,523 87,399

TABLE IV.

	Failures in 1st re-vaccination.	2d re-vaccination.	Successful.	Total. Successful, 1st and 2d re-vaccination.
1834 1836 1837 1838	15,488 14,048 15,393 14,252 13,523	4,530 14,048 15,393 14,252 13,523	866 1,569 2,243 2,306 2,254	19,002 16,884 23,551 21,423 15,777
	72,704	61,746	9,238	96,637

By the second table, it will be seen, that re-vaccination was successful in 38.4 per cent. of the cases, in which it was performed. The first table which presents the results of re-vaccination, in the Prassian army, for 9 years, shows nearly the same ratio of successful cases, namely, 39 per cent. While, by the fourth table, it will be seen, that in 12.7 of the cases in which a second re-vaccination was

performed, the operation was successful.

We are not, however, to conclude, that, in every case in which revaccination is successful, the individuals have been previously well vaccinated. In, perhaps, the majority of instances, we have no other evidence of the primary vaccination, and of its character, than the report of the individuals themselves, and the presence of a more or less perfect cicatrix upon the arm, neither of which is to be received as conclusive. But, after making a reasonable deduction for such cases as may be supposed to have been imperfectly vaccinated in the first instance, there still remain a large number of cases, (about 33.3 per cent.) in which the primary vaccination, though to all appearances, regular and complete, fails, from some peculiarity of constitution, to afford a perfect security from subsequent variolous infection, and in which a re-vaccination is essential, in order to ensure to the individuals a full protection.

If, therefore, the facts we have presented are perfectly accurate, and there is no reason for suspecting them to be otherwise, they afford conclusive evidence of the necessity and importance of re-vaccination, in all cases in which persons are liable to be exposed to the infection of small-pox; not, however, from any fear that the protective power of the primary vaccination, when the system has been placed fully under its influence, may be impaired by time, but simply as a test whether the susceptibility of the individuals to variolous disease has been fully extinguished. Had we no other proof of the importance of re-vaccination, that derived from the results of the operation, among the soldiers of the Prussian army, would be sufficient. The whole army now enjoys an almost entire immunity from the contagion of small-pox, notwithstanding it has been repeatedly subjected to its influence. To the report for 1841, we find attached the following important statement:

The powerful influence of re-vaccination, in the diminution of variolous diseases, at the different military hospitals, is most remarkable. During the year 1841, there occurred but 50 cases, of which 10 were genuine variola, 24 modified small-pox or varioloid, and 16 varicella. Three of the patients died; of these, one had not been vaccinated, on his admission, into the army, but his certificate indicated, that he had been a short time previously; the second occurred in a recruit, who had not been re-vaccinated; and the third, in a non-commissioned officer, who had been re-vaccinated some years before, but without success. Before the order for re-vaccination was issued, the different barracks used to be a prey to varioloid disease, which has now almost

entirely disappeared.

Phenomena of vaccination. On the third day after the insertion of the matter in the arm, the wound appears red and elevated, and, on the fourth, is surrounded by a very faint and narrow inflamed base, or arcola. By the aid of the microscope, the efflorescence surrounding the inflanced point, will be distinctly visible. On the fifth day, the cuticle is elevated into a pearl-coloured vesicle, filled with a small quantity of perfectly transparent fluid. The form of the vesicle is circular or oval, according to the manner in which the incision for the introduction of the virus is made. The vesicle is somewhat flattened, and with a small depression in the centre, rather darker than the rest of its surface. It continues to enlarge in circumference, but not so much in elevation, until the eighth day, when it is at its height. Its margin is then turgid and prominent, and it contains a greater or less When closely examined, the vesicle exhibits a celluamount of fluid. By the floor of the cells, which are from ten to lated structure. fourteen in number, is secreted the specific matter of the disease. At this period, some degree of febrile excitement very generally occurs:in some cases, the glands of the axilla become swollen and painful, and a state of general lassitude and drowsiness, with slight creeping chills, alternating with flushes of heat, is observed;—in other cases, the febrile excitement is much slighter, and, in some instances, scarcely perceptible. On the evening of the eighth day, the slight circle of inflammation which surrounds the vesicle on its first formation begins to spread, until, by the tenth day, it forms a broad arcola, surrounding the vesicle, of a bright red, colour, and of a perfectly circumscribed circular form; the parts occupied by it being tense and painful. By the eleventh day, the depressed centre of the vesicle begins to assume a darker hue, and this darkness gradually extends towards the circumference; and, by the fourteenth day, the entire surface of the pock is converted into a dark brown scab: - by degrees this becomes harder and of a blacker colour; in a few days it begins to separate at the circumfcrence, but still adheres at the centre, and does not fall off until between the eighteenth and twenty-first day, and sometimes even later; leaving, upon its separation, a cicatrix of a form and size proportioned to the previous inflammation, and marked with radiations and indentations.

In a few instances the vesicle is developed at a somewhat earlier period; and in other cases, a number of days elapse, after the insertion of the matter, before the appearance of the vesicle. According to Dr. Gregory, the period of retardation never exceeds sixteen days. It not unfrequently happens, that on the day after the matter is inserted, considerable inflammation and swelling occur at the place of insertion, which, after continuing for a day or two, subside rapidly without leaving any local affection.

Most commonly but one vesicle is developed at the point where the matter is inserted:—occasionally, however, one or more smaller vesicles appear, in the immediate vicinity of the primary one; and instances have occurred, in which numerous vaccine vesicles presented

themselves on different parts of the body, the matter taken from which, communicating the disease to other persons, as effectually as that derived from the primary vesicle on the arm. (Report of the

Central Vaccine Committee of France, for 1818-19.)

In many cases, the wound made by the insertion of the matter becomes, at an early period, very red and itching, and a small accuminated, conoid pustule occurs on the eighth day, surrounded by an imperfect, irregular areola:—the pustule is filled with an opaque, straw coloured fluid, and forms, a small, light-coloured scab, which separates prematurely. Such cases are always to be regarded as instances of spurious vaccination.

In other instances, instead of a circumscribed areola, an inflammation of an erysipelatous character extends over the whole arm, from the elbow to the shoulder:—the vesicle, in place of being converted into a hard scab, causes a large ulcer, which discharges profusely, and is occasionally difficult to heal;—the resulting scar is large, and irregular, without either radiations or pittings. In these cases, also, there is a doubt whether the system is placed fully under the influence of the vaccine infection.

Another irregularity is, when, about the sixth or seventh day, the vesicle becomes partially inflamed and scaly, and surrounded by a species of psoriasis in place of an arcola. This is an unquestionable indication of spurious vaccination.

Between the ninth and twelfth day, in robust, plethoric children, it sometimes happens that the body becomes generally, or partially covered with a papular cruption, which, however, in no degree inter-

feres with the effects of the vaccination.

Period for vaccination. Not a little discussion has recently taken place, as to the proper age for the performance of vaccination. By some, its postponement until after the child is one year old, is strongly insisted on, under the supposition that, previously to this age, the infection of the system is apt to be imperfect, or, at best, not permanent: (Heim:)—others have considered the disease to be more regular, and accompanied with less febrile irritation, in infants from two to six months old; while others again maintain that it should be performed as soon after birth as possible, and that it succeeds equally well at whatever age the matter is inserted. (Capuron.)

At a late discussion upon this subject, before the Medico-Chirurgical Society of London, Dr. Gregory gave it as his opinion, that, provided a good vesicle and areola were produced, with a due degree of constitutional effect, it matters not whether vaccination be performed at the second or third month, or the second, third, or fourth year:—he considered the true question for consideration to be, at what period of infantile life vaccination can be practised, so as most certainly to ensure success, and avoid inconvenience to the parties. In the first week or ten days after birth, before the infant has attained any degree of plumpness, it is very difficult to vaccinate, not from any want of susceptibility in the patient, but from the difficulty of inserting the

lymph properly; this difficulty is more or less present until about the fourth month, and hence, this is the period usually chosen; for not only is the arm then generally plump, but there are, also, no contending influences, such as teething, present. Mr. Ceely agreed, in the main, with Dr. Gregory. It was stated by Dr. T. Thompson at a discussion, before the Medical Society of London, that at the Foundling Hospital, Paris, he believed all the children were vaccinated within

the month, and the operation was generally successful.

From the facts recently adduced in relation to this subject, as well as from the result of our own experience, we should be inclined to agree with Dr. Gregory, as to the proper period for vaccination, when there exists no urgent necessity for its more early performance. We have found, however, that in very young subjects, there is often a great difficulty in communicating the vaccine infection; nevertheless, when we have succeeded in placing the system, at this age, effectually under its influence, as evidenced by the character and progress of the vesicle upon the arm, its prophylactic powers were as fully obtained, as when vaccination is delayed until a later period.

While we choose, generally, the fourth month as the most convenient age for vaccination, yet should the prevalence of small-pox endanger the life of the infant, or a necessity present itself for the immediate removal of the latter to a situation where pure vaccine matter can with difficulty be procured, we never hesitate to vaccinate at any period, even

within a few days after birth.

No preparation of the system is demanded previously to the performance of the operation, nor, when the disease produced is of a genuine character, is any medical treatment necessary during its progress, nor subsequently. In cases, however, in which children are affected with herpetic and other eruptions upon the skin, it has been asserted that so entire a change is produced in the character and progress of the vaccine infection, as to destroy its prophylactic powers: (Jenner, Willan:)—others, however, maintain, that these affections produce no change in the character of the vaccine infection (Capuron;) and others, again, assert, that the vaccine infection has the effect of completely removing whatever cutaneous disease the child may at the time be affected with. (Valentin, Husson.) The safest course is, if there be no immediate necessity for vaccinating, to defer it until any eruptive disease upon the skin is removed, but if small-pox is prevailing at the time, to insert the matter, and subsequently, to subject the child to the test of re-vaccination.

Vaccination adds nothing to the danger, nor in any degree interferes with the process of dentition; and it may safely be performed during every season of the year; though, as a general rule, where it can be done conveniently, it is better to wait until the rigors of winter have been moderated by the influence of spring, or until the heat of

summer has given way to the coolness of autumn.

Mode of viccination. By the generality of European physicians, in vaccination, the recent lymph obtained from the vesicle between the

fifth and eighth days is employed; the experience, however, of the great body of American practitioners, has confirmed them, in giving to the dry crust or scab the preference over the recent lymph, as a means of propagating the disease. While equally efficacious with the latter, the scab is much more manageable, and more readily preserved; while, at the same time, its use obviates the necessity of interfering with the regular progress of the vaccine vesicle, a circumstance of very considerable importance in reference to the certainty of the child's infection.

In regard to the appearance of the scab, when we are certain that it is the product of the genuine disease, and has not deteriorated from keeping, nothing of course need be said; but as this cannot always be the case, it is important to be aware of the appearance presented by the real vaccine crust. This is of a dark mahogany or walnut colour, hard and perfectly opaque, somewhat thick in the centre, and thinner at the edges, and nearly level, or only slightly concave at its under surface, or base; when cut into thin slices, it presents a dirty brownish appearance; it is rather tough—being with difficulty reduced to a powder, but readily soluble in water. A scab produced by a vesicle, the regular progress of which has been interfered with, by the irritation of the clothing, accidental violence, or other cause, or one procured from a child affected at the time with any disease of the skin, should not be made use of for vaccinating; as the disease communicated by it will seldom be found genuine, while the virus obtained from children labouring under cutaneous affections is supposed to communicate these to the individuals in whose arm it is inserted. (Willan.)

In preserving the scab for use, the greatest care should be taken to keep it excluded, as much as possible, from the air, and from the slightest degree of moisture; with care, the scab may be preserved throughout the year, without in the slightest degree losing its acti-

vity.

Previous to its insertion, a small portion of the dry scab should be reduced, by means of pure cool water, into a paste of about the consistency of cream; for this purpose, a square of window glass, or the bottom of a china plate or saucer, and a lancet or pen-knife, constitute every thing that is necessary. When, as is customary, the physician carries with him a portion of glass upon which to form the paste, two precautions are absolutely necessary; which are, each time the glass is used, to clean and dry it perfectly before it is put away; and, on no account whatever, to preserve the portion of dissolved matter remaining from one vaccination, for a subsequent one:—virus thus kept, will be a constant source of disappointment to the practitioner, and of danger to the patient.

The common plan of inserting the matter in the arm is, to take a small portion of it upon the point of a sharp lancet, which latter is then introduced obliquely, for a short distance, beneath the cuticle. We have found, however, this mode of vaccinating to be very unsuc-

cessful:—however pure and fresh the matter may be, often no infection is communicated, until after the operation has been several times repeated. This arises from two eauses; -either the matter being entirely wiped off from the point of the lancet, in passing the latter under the skin, so that not a particle is introduced; or so much blood is caused to flow by the puncture, as to wash out the matter after it has been deposited beneath the cutiele. The plan we invariably practice, and which we first proposed near twenty years since, is to make, at the place where the matter is to be inserted, several parallel incisions, with the blade of a common spring lancet; taking care, however, that these incisions penetrate no deeper than is necessary to divide the cuticle; and then to cross them, at right angles, by others of a similar depth:—this operation, when properly performed, will be found to cause a slight blush of redness upon the part, and, most commonly, the appearance of a few very minute speeks of blood; the less blood, however, that is thus occasioned to flow, the better. A portion of the dissolved crust is now to be taken on the point of a lancet, and smeared over the incisions, and allowed to dry.—To render the insertion of the matter still more certain, it has been proposed to smear the matter upon the arm, previously to dividing the cuticle. One recommendation in favour of the foregoing plan, independent of its certainty, is, its being productive of so little pain, that it may be performed while the infant is asleep, without awaking it, or even when it is awake, almost without its knowledge,—a circumstance, however trivial it may appear, which is by no means beneath the notice of the practitioner.

Subsequent to vaccination, the arm should be guarded from irritation by the fingers of the patient, its clothing, or accidental violence. To effect this, the best means is, to enclose the whole arm in a wide sleeve of linen, or fine muslin, drawn at the shoulder and wrist. This is a precaution of some importance, as well to obtain a genuine, effective scab, as from the fact, that the certainty of the child's being fully infected with the vaccine disease may be jeoparded by its

negleet.

It is well known that, while in this country, the physician, generally speaking, is content with the production of a single vesicle upon the arm, many of the practitioners of Europe, and especially those of Germany, advocate strongly the insertion of the vaccine matter, either in both arms at the same time, or by a number of incisions or punctures in the same arm, as a necessary precaution, in order to insure the full influence of the vaccine infection. A very expert vaccinator, (Mr. Leese,) stated recently, at one of the meetings of the London Medical Society, that he never knew a case of consecutive small-pox to occur in an individual in whose arm there were above four cicatrices from the primary vaccination; and we are informed by another practitioner, (Dr. Chowne,) that in the Small-pox Hospital of London, so great a dependence is placed upon the number of the cicatrices present, that the character of the consecutive disease, is generally prog-

nosticated from that circumstance alone. It is recommended by Dr. Gregory, that with lymph of ordinary intensity, three or four vesicles should be raised, and that these should be at such a distance from each other, as not to become confluent in their advance to maturation. Other practitioners, of equal authority, maintain, that a single vesicle, if it proceed regularly through its several stages, and produce a proper degree of constitutional effect, as indicated by the febrile excitement about the eighth day, is as effectual as twenty; many of these, however, admit, that the appearance of several well-defined vaccine cicatrices, affords strong presumptive evidence that the due degree of infection has been produced; and this corresponds with our own experience.

In ordinary cases, nothing is necessary during the progress of vaccination, excepting the observance of the same hygienic rules which are equally proper even had vaccination not been performed. If the febrile excitement which occurs about the eighth day, is considerable, a slight reduction of diet, with some gentle aperient, and cool diluent drinks, is all that is required. If the inflammation spreads to an undue extent over the arm, lotions of cold water, or of a solution of the acetate of lead, will, in general, speedily reduce it; but if it be of a very intense character, a few leeches may be necessary.

6.-Modified Small-pox.-Varioloid.

MITIGATED SMALL-POX.

It is now well ascertained, that persons who have been vaccinated, when exposed to the contagion of small-pox, become, in many instances, attacked with an eruptive disease, more or less similar in its leading characters, to genuine variola; but generally attended with much milder symptoms, less protracted in its duration, and far less fatal in its results. This disease has been shown, by facts the most incontestible and conclusive, to be small-pox, modified in character, and mitigated in violence, in consequence of the change produced in the constitution of the patient, by the vaccine infection. As the modifying influence of the vaccine disease is more or less extensive in different individuals, we have, consequently, a corresponding difference in the character and intensity of the varioloid affection; which, in some cases, is of so very trifling a nature, and of such short duration, as scarcely to confine the patient at home, or, at furthest, not beyond a day or two; while in others, it approaches closely, in its features and in severity, to unmitigated variola.

On tracing back the history of small-pox to our earliest records, we find that the occurrence of the disease in a modified form, has been repeatedly noticed in former years, during the prevalence of variolous epidemics, under the denomination of vesicular, abortive, or spurious small-pox; the genuine and spurious forms of the disease appearing during the same epidemic, and both ceasing with its termination.

The more extensive prevalence of the varioloid affections, during the last twenty-five years, is evidently owing to the existence of a more extensive modifying cause, in the general practice of vaccination, which, while it affords, as we have shown, in the greater number of cases, a full protection against the contagion of small-pox, in many, only partially destroys the susceptibility to that disease, and still leaves the system liable to be affected by it, in a more or less modified form.

Soon after the introduction of vaccination, it was noticed that some of those who had undergone the disease, were attacked with a vesicular eruption, of a very mild character; this, however, attracted but little attention, as the disease was considered to be merely chicken-pox, against which, neither innoculation nor vaccination was considered to afford any security. Subsequently, however, when the disease began to prevail epidemically, it was held by many to be a new malady, and to originate from a peculiar or specific contagien; but, finally, its identity with small-pox was fully proved. The true character of varioloid affections, is now very generally recognized.

Upon examining, with attention, the whole of the facts connected with the prevalence of small-pox, from the earliest period of its history, and comparing them with those which have been developed since the introduction of vaccination, we find many strong reasons for attributing to one common origin the entire family of vesicular and pustular cruptions—the small-pox, chicken-pox, sheep-pox, stone-pox, horn-pox, and a host of others; their distinctive characters resulting from various, and, perhaps, successive modifications that the original virus has undergone, as well as from a difference in its effects upon different constitutions, produced by causes from which their susceptibility to its influence is either increased or diminished. The various cruptions alluded to, run into each other, by almost imperceptible gradations; while all, or the greatest part of them, are very apt to prevail during the same variolous epidemic.

Under so great a variety of grades, and accompanied by so much diversity in the appearance, progress and duration of the eruption, and in the character of the concurrent symptoms, does modified small-pox present itself, at different times and in different individuals, that it is impossible to give any general description of it; while to enter into a detail of all the varieties it presents, would lead to no useful practical results. Confining ourselves, therefore, to the varioloid affection as it occurs in persons who have been vaccinated, we shall present the

more important of its leading characteristics.

The varioloid eruption is, in some cases, preceded by little or no fever; while in others, the febrile excitement is marked by a considerable degree of intensity. The eruption may occur as early as the second day, or not until the fourth or fifth:—frequently it is preceded by a transient, uniform efflorescence of the skin, or by a rash closely resembling that of measles. The eruption manifests itself in the form of minute papulæ, of a more or less red colour:—with the appearance

of these papulæ, all febrile symptoms almost invariably cease, and do not again recur, unless in consequence of some accidental cause, entirely unconnected with the disease. Many of the papulæ become dry and disappear, soon after their appearance; whilst others of them become converted, in the course of the first or second day, into vesicles, filled with a limpid watery fluid, which gradually becomes thicker, and of a whey-like appearance. Frequently some of the more prominent vesicles, (more or less in different cases,) are surrounded by a small, faint areola. About the third or fourth day, the vesicles burst, or become dry, forming small, light-coloured crusts, which soon separate, and either leave no mark upon the skin, or a slight prominence at the points occupied by the vesicles, which soon disappears. In other cases, the vesicles become filled with a puruloid fluid, and are slightly depressed in the centre. The crusts formed by the drying of the vesicles, generally fall off in two or three days, though they have been known to adhere for a week, or even longer. Occasionally, the contents of the vesicles retains its serous character for four or five days, and then becomes puriform; in which state it may remain for several days, before the desication of the pustules commences. It is not uncommon for papular, vesicular, and pustular eruptions, in close proximity, to exist at the same time upon the surface. The pustule and its areola, in some cases of varioloid disease, exhibit a striking resemblance to those resulting from vaccination. (Thompson.) In other cases, during the eruptive stage, the attack approaches, in its violence and general character, one of genuine variola, so as to be scarcely distinguishable from the latter; and the eruption may even be so abundant, as to resemble the primary stage of confluent small-pox. Varioloid may, however, be generally distinguished from unmodified variola, by the appearance of the eruption in successive clusters, and at irregular periods, between the second and fifth days; the absence of fever in all but the most violent cases; the smallness of the vesicles, and the whey-like character of their contents; their early desication without being converted into pustules; or, when their desication occurs at a later period, their not entering into complete suppuration, as in small-pox; the early separation of the scabs, which are of a lighter colour than those of variola, and leave, at the parts to which they were attached, small, red disks, or slight elevations, instead of pits.

That the disease just described is produced by the contagion of small-pox, acting upon constitutions in which the susceptibility to its influence is, to a certain extent, reduced either from the result of previous disease, or from idiosyncrasy, is so generally admitted that it is scarcely necessary to enter here into a review of the arguments by which the fact is fully established. In almost every community, in which epidemic small-pox now occurs, there are many individuals who have already had the disease; a much larger number who have been vaccinated more or less perfectly; and others, again, who are wholly unprotected, either by variolation or vaccination. In those of

the first two classes who are attacked by the epidemic, the disease will, in the great majority of cases, assume the varioloid, or modified form; while in those of the latter class, with but few exceptions, the character of the disease will be that of discrete or confluent variola, varying only in intensity. In a few instances, however, we shall meet with cases of varioloid cruption, closely resembling chicken-pox, in the unprotected. It is this latter circumstance, which gave rise to the doctrine of the varioloid disease being the result of a peculiar contagion, altogether distinct from that of small-pox—the occurrence of the two diseases during the same epidemic, being considered as merely accidental. The falsity of this doctrine is, however, fully shown, by the fact, that the matter taken from the vesicles of the varioloid affection occurring in unprotected individuals, will communicate to others similarly situated, genuine small-pox; a fact which we have verified by actual experiment.

The treatment of modified small-pox is to be conducted on the same general principles as that of the disease in its unmodified form. Many cases are so slight as scarcely to require the confinement of the patient to his chamber; while others are marked by symptoms which occasionally call for the employment of blood-letting; in general, however, all that is necessary will be, rest, a cooling regimen, a spare, unirritating diet, cool, acidulated drinks, and the administration of some active purgative, in such doses, and at

such intervals, as will keep the bowels freely open.

7.—Varicella—Chicken-pox.

Varicella may be defined, a febrile, vesicular, eruption; the vesicles desicating without maturation, and often leaving cicatrices or

pits upon the separation of the crusts.

The eruption in varicella is generally attended with some degree of febrile excitement; in some cases, however, this is so slight as scarcely to attract attention; whilst in others, it is of considerable severity, continuing for two or three days, and attended with severe pain of the back, head, and extremities. The eruption, which generally appears first on the breast and back, then on the face and scalp, and finally on the extremities, is often preceded, for a few hours, by a general erythematous efflorescence, and accompanied, in most cases, by a disagreable tingling or itching of the skin. The eruption of vesicles usually appears in succession, during three or four days; so that while some are just appearing, others are fully formed; others, again, are beginning to shrivel; and others, still further advanced, are completely dry, and in the form of crusts.

From a difference in the form and appearance of the vesicle, varicella has been divided into three varieties, the lenticular, the conoidal,

and the globular, or swine-pox.

In the lenticular variety, the eruption appears very early, in the form of small, somewhat oblong, flat, red, and shining elevations,

having in the centre a minute vesicle, which enlarges, and by the end of the second day is filled with a whitish fluid. On the third day, the fluid in the vesicle acquires a pale yellow colour; and on the fourth day, the vesicle becomes shrivelled; and in two days more, is converted into a small, brown crust, which separates about the ninth or tenth day, leaving a red mark, which soon disappears, without any cicatrix or depression remaining.

The duration of the disease is often protracted by the appearance of fresh vesicles, on two or three successive days, which go through

the same stages as the first.

In the conoidal variety, the vesicles appear suddenly, surrounded by a slightly inflamed margin. They are elevated, pointed, and contain a limpid serum; on the second day, they are more distended, surrounded by a broader areola, and contain a pale yellowish fluid; on the third day, many of them contain a purulent matter; they now become shrivelled, and on the ensuing day, scabs begin to form; some of a dark brown, and others of a yellowish, semi-transparent appearance. The scabs generally separate in four or five days; those containing purulent matter, leaving pits in the skin. A fresh crop of vesicles usually appears on the second and third days, each running the same regular course:—the eruptive stage is consequently prolonged until the sixth day, and the separation of the scabs is not finished until the eleventh or twelfth day.

In the globular variety, the vesicles are large and globose, with an irregular base, and surrounded by an inflamed margin. They are filled with a transparent fluid, which assumes, on the second day, a whey-like appearance:—on the third day, they begin to shrivel, and assume a yellowish appearance, from a small quantity of pus being mixed with their contents. Scabbing commences on the fourth day,

and the scabs separate in four or five days.

Varicella is never attended with secondary fever: but the scabs, upon separating, occasionally leave indelible cicatrices or depressions in the skin; these differ, in some respects, from those of small-pox, being whiter than the rest of the skin, and quite smooth or even, with an even, rounded margin; whereas, those from small-pox are of the colour of the surrounding skin, and uneven, like the surface of an orange, with an indented or angulated margin. Hairs occasionally grow within the latter, while they never do in those of the former. (Heim.)

Varicella rarely occurs more than once in the same individual. It may appear sporadically, but generally prevails as an epidemic, of moderate extent. It is capable of being propagated by contagion or infection, as well as by innoculation. (*Thompson*, *Heim.*) Its subjects are usually children, although adults are frequently attacked

by it.

Much controversy has taken place as to the true nature of varicella. By most of the earlier writers, the disease was considered to be a spurious or bastard form of variola; (Vidius, Senertus, Riverius,

Morton, Sydenham, Harvey, Mead, Hoffman;) by subsequent writers, however, it was attributed to a contagion entirely distinct from that of small-pox, and great pains were taken to point out the specific characters by which the two diseases are distinguishable. The doctrine of the independence of varicella and variola, with few exceptions, was adopted by the profession generally, until about the year 1816, when the discussion was renewed, and the identity of the two affections was again asserted, and many facts and arguments adduced in support of it. (Frank, Berard, Delavit, Thompson.)

To disprove the common origin of varicella and small-pox, the following arguments have been adduced: 1st. That the symptoms of varicella are peculiar and distinctive, and run always a regular course peculiar to that disease. 2d. That small-pox often occurs without varicella, and varicella independent of small-pox. 3d. That varicella occurs equally, and with the same characteristic symptoms, in those who have had the small-pox, in those who have been vaccinated, and in those who are entirely unprotected by either. 4th. That the previous occurrence of small-pox does not prevent or modify varicella, nor varicella small-pox. 5th. Varicella is incommunicable by innoculation: and 6th. That varicella is more common now than before vaccination was so extensively practised, when small-pox was more prevalent. To these it has been replied, by the advocates of the identity of the diseases: 1st. That very little or no difference exists between the milder forms of small-pox and ordinary cases of varicella; and that even between cases of the two diseases of greater intensity, the difference is in the extent of violence, rather than in the character of the symptoms. That in some epidemics it is frequently impossible to say which cases are varicellous, and which variolous. (Berard, Delavit.) 2d. That the occurrence of varicella, either before, during, or immediately after small-pox epidemics, has almost invariably happened. That we have no well authenticated accounts of the occurrence of varicella unconnected with small-pox, before the introduction of innoculation; and none to be relied on previous to the general practice of vaccination, when, if the varicella be but a modified form of variola, it was reasonable to expect that sporadic cases of it would occur occasionally, independently of the latter; though the fact of the extensive independent prevalence of chicken-pox, has not yet been well established. But when we know that, from some inappreciable difference in its epidemic causes, the small-pox assumes a very great dissimilarity of character at different periods, one epidemic being mild, others severe, and others peculiarly malignant; and that even the character of the eruption has been known to differ materially, it is not unreasonable to suppose, that in the same manner it may appear at one time as a mild or severe varicella, and at another, invariably under its more aggravated forms. 3d. Varicella occurs much more frequently in those who have been variolated or vaccinated, than in the unprotected: (Bryce, Abercrombie, Thompson:) while its symptoms differ materially in different cases; the vesicles

desicating early in some, and the separation of the scabs leaving no cicatrices; whilst in others, some of the vesicles are more or less fully maturated, the scabs adhere for a longer time, and on falling off, leave indelible pits in the skin. Some cases are marked by scarcely any eruptive fever; others by a febrile reaction as intense as in the severer forms of small-pox. 4th. Persons who have suffered an attack of small-pox have been observed to be seldom affected with varicella; (Thompson;) while it has been asserted, upon good authority, (Reil,) that small-pox is generally much milder when it occurs subsequent to a severe attack of varicella, than when it occurs in those who have not been affected with the latter disease. 5th. Varicella, like small-pox, is capable of being communicated by innoculation. (Bateman, Thompson, Heim.) 6th. The fact of its more frequent occurrence since the general introduction of vaccination, is an evidence in proof of varicella being but a modification of small-pox; previously there was a more general susceptibility to the genuine forms of variola, now, by vaccination, whole communities are, in a great measure, protected from the latter, though from various causes, they still remain susceptible of infection, to a certain extent, and hence the very extensive prevalence of varicella, in common with various other modified forms of small-pox, known by the name of varioloid.

Upon the treatment of varicella, the same remarks may be made as were made in reference to the management of modified small-pox. The disease seldom requires much medical attention; a restricted diet, cool drinks, and gentle aperients will be proper in all cases. If the eruptive fever is very severe, and the child robust and plethoric, a small bleeding from the arm, with saline purgatives, and a low diet

will suffice to moderate its violence.

CHAPTER II.

CUTANEOUS ERUPTIONS.

ERUPTIONS OCCURRING PREVIOUS TO WEANING, AND DURING DENTITION.

1.—Strophulus.

ERUPTIONS of pimples, generally appearing first upon the face, neck, shoulders, hands and arms, but occasionally on other parts of the body. (S. Intertinctus.) When the pimples have a florid, red appearance, the term red gum is familiarly applied to the eruption. When

of a paler hue, exhibiting a less degree of irritation, it is denominated white gum. (S. Albidus.) In its simplest and most common form, strophulus consists of a few pimples irregularly distributed, and now and then mixed with diffused patches of redness. (*Plumbe.*) When, from any cause, the irritation of the skin is considerably augmented, these patches are very numerous; the pimples are of a large size, many of them presenting a vesicular appearance, which, however, soon disappears. When strophulus occurs during dentition, the pimples are harder, and occur in patches, with considerable redness of the skin, and are more generally diffused over different parts of the body. (S. Confertus.) When, from any cause, there is considerable derangement of the secretions, or the child has been improperly fed, the eruption is attended with itching, pain, and excoriation, resembling, on the lower parts of the body, the intertrigo of infants, or the irritation of the skin, with abrasion of the cuticle, produced by the stimulus of the urine; and is, occasionally, like the latter, produced by not changing the diapers as soon as they become wet, or reapplying those that have become saturated with the urine, without washing. (*Plumbe.*) In all cases of strophulus in which, from bad management, or accidental causes, any degree of febrile excitement is produced, the eruption is increased in extent and severity, and constitutes the S. Volaticus.

The eruption in strophulus is generally described as papular; but it is probably more correct to refer it to an over-distension of the cutaneous vessels, giving rise to the escape of minute portions of

lymph beneath the cuticle. (Plumbe.)

The predisposition to this affection consists in the greater degree of vascularity and irritability of the skin, in infancy, and the extreme delicacy of the cuticle. The exciting causes are, over-feeding, a too stimulating diet, too rough and warm clothing, the irritation of teething, or any circumstance calculated to quicken the circulation, and

promote unduc determination to the skin.

In the treatment of strophulus, the extent and intensity of the eruption, must be taken into consideration. In the milder cases, and where the eruption is of little extent, nothing is required beyond a proper regulation of the patient's diet and clothing, gentle aperients, and the occasional use of the warm bath. During dentition, the gums should be attended to, and, if inflamed or swollen, they should be freely scarified. When the disease is connected with derangement of the digestive organs, the same treatment will be required as would be proper were no cruption present. In aggravated cases, accompanied by much febrile excitement, an emetic, followed by mild aperients, and minute doses of calomel, ipecacuanha, and nitre in combination, with the tepid bath, and a mild, unirritating diet, will generally succeed in relieving the violence of the symptoms. strophulus frequently recur during suckling, it will be judicious to change the nurse. When the eruption is attended with itching, pain, and excoriation, much relief will be obtained by bathing the parts

frequently, with any simple mucilaginous wash, as bran tea, infusion

of slippery elm bark, or the pith of sassafras.

In cases in which the eruption continues for a long time, or frequently recurs at short intervals, the health of the patient is liable to become much deranged; and clusters of pimples, of a dark colour, will arise on different parts of the body, terminating in brown exfoliations, and accompanied by febrile symptoms; a brown, scabrous condition of the skin succeeding, often of long duration. (Dendy.) This condition is generally connected with more or less disease of the digestive organs, and demands for its removal minute doses of calomel, combined with magnesia and ipecacuanha, and some light tonic, with the daily use of the warm bath, and a well regulated diet. Occasionally, change of air is attended with the best effects.

2.—Prurigo.

An eruption of pimples, differing but little from those of strophulus, but usually less distinct and flatter, and mostly confined to the outer surface of the limbs and trunk. It is attended by intolerable itching, which is aggravated by whatever induces an undue determination to the surface. By scratching to relieve the intolerable sense of itching, which ensues when the patient is heated or excited, or warmly covered in bed, considerable heat and redness of the surrounding skin is produced, and the pimples becoming abraded, there issues from them a transparent or bloody fluid, which, concreting on the surface, forms thin crusts, of a brown or black colour; when the crusts separate, a dull, crimson mark often remains for some time. In children of a full, gross habit, the irritation of scratching or friction, gives rise, occasionally, to a superficial ulceration, or a pustule, terminating in the crust of impetigo. In the more aggravated form of prurigo, (P. Formicans) the itching is intense and constant, resembling the crawling or stinging of insects; this is increased by heat, and by warm stimulating food. Occasionally white wheals and dark brown crusts appear, over different parts of the body, attended often with a degree of tumefaction about the arms and legs, by which the freedom of their movements is impeded. (Dendy.)

Prurigo is most troublesome in the spring and at the commencement of summer; and is apt to recur for months, and even years. It is usually accompanied by symptoms indicative of more or less derangement of the digestive organs. It is commonly produced by excess of food; or that which is indigestible, or has undergone some change by which its wholesomeness is impaired. Fish or oysters, when out of season, will often produce it; it has occurred, in some cases, after a draught of cold water, or some acid drink. In some constitutions, it will result from a very slight irritation of the stomach or bowels, and in others without any evident cause, excepting a sudden change in the temperature of the season, from cold to warm.

In the greater number of cases of prurigo occurring in children,

the disease would readily give way to an emetic followed by a mild cathartic, and a properly regulated diet, could we prevent the patient from constantly irritating the pimples by scratching and friction with his hands; which might generally be accomplished, by muffling or securing the hands, and frequently bathing the eruption with tepid water, or some mucilaginous wash. A watery solution of opium has occasionally succeeded, in our hands, in allaying the irritation on the skin. In robust, plethoric habits, occasionally, purgatives and a plain vegetable diet will be proper; and in violent cases, the loss of a few ounces of blood may even be demanded. In cases attended with derangement of the digestive functions, remedies should be resorted to calculated to restore these to a healthy condition. The decoction of dulcamara, the hydrochloric acid, and the arsenite of potassa internally; touching the more prominent pimples with aromatic vinegar, or a solution of hydrochloride of ammonia; lotions of the sulphate of potassa, the chlorate of lime, or of a solution, in water, of the extract of belladonna, or ointments of sulphur, have been recommended for the cure of inveterate cases; we have, however, seen no case occurring in children in which we have found it necessary to resort to any of these remedies. A moderate, wholesome diet, a cooling regimen, attention to the state of the bowels and digestive organs, the daily use of the warm bath, and, as local applications to allay itching and subdue irritation, frequent lotions with tepid water, or some simple mucilaginous wash, and occasionally with a watery solution of opium; and in cases in which there was nothing present to forbid its use, an anodyne at night, are the remedics, which, in our hands, have never failed to subdue the prurigo in children.

3.-Crusta Lactea.

IMPETIGO LARVALIS VEL MUCOSA—PORRIGO LACTEA VEL LARVALIS—TINEA MUCIFLUA—ECZEMA LACTEA.

This eruption generally occurs upon some portion of the face, especially upon the cheeks, and is more frequent during dentition than at any other period. It usually commences in one or more distinct red blotches, which become studded with numerous, small, yellowish pustules, nearly confluent, and attended with considerable itching; and preceded and accompanied, in severe cases, by some degree of erysipelatous inflammation. At the end of three or four days, and sometimes earlier, the pustules burst, and discharge their contents, which dries upon the skin, forming concretions of a whitish yellow or greenish tinge, semi-transparent, and very friable. The crusts lie in laminæ, some over-lapping others, or intersected by narrow pink or olive coloured fissures. The discharge continues to ooze from under the scab, which grows constantly thicker. The incrustations may be confined to a small space, or occur on several parts of the

face at the same time; or they may extend over nearly the whole face, covering it as with a mask. When the crusts are detached, the surface of the skin beneath them is found to be red and inflamed, and studded with numerous minute pores, from which the discharge proceeds.

The crusts usually remain attached from two to four weeks, when the secretion of matter diminishes, and the crusts separate, and fall off gradually, leaving a red, shining, and very tender surface, which, upon the slightest irritation, is liable again to form pustules, and reproduce the disease. In this manner, by fresh crops of pustules occurring after the separation of the scabs, the disease may be prolonged for an indefinite period;—in such cases, deep chaps, and even ulcerations of the skin may ensue.

In cases of prolonged crusta lactea, occurring in children of a lymphatic temperament, with fair hair, pale, delicate skin, and languid circulation, some degree of intumescence of the parotid, sub-

maxillary or cervical glands, will often occur.

The matter discharged from beneath the scabs would appear to possess some degree of acrimony, for the part of the child's breast which comes frequently in contact with the diseased chin, when this is the seat of the cruption, soon becomes red, and exhibits an eruption of pustules, which terminate, as on the face, in a superficial ulceration. A similar effect is produced, occasionally, on the arms of the nurse who attends a child affected with crusta lactea. (*Plumbe.*)

Even in the severest forms of the disease, no permanent marks are

left upon the skin.

The treatment will depend very much upon the period at which the disease is first seen by the physician. In ordinary cases, and in the earlier stages of the eruption, it will generally yield, very readily, to a proper regulation of the diet, which should consist, either of the breast-milk of a healthy nurse, or, after weaning, chiefly of the farinacea, with or without milk, according as this is found to agree or not with the stomach of the patient, in conjunction with mild aperients, minute doses of calomel, magnesia, and ipecacuanha, the daily use of the warm bath, and exposure to a fresh, pure atmosphere. The best local applications are emollient washes, and the watery solution of opium. When, from the long continuance of the eruption, the general health of the patient has begun to suffer, it may be found necessary, in conjunction with a cautious course of alteratives, to administer some of the lighter mineral and vegetable tonics—as, the tartrate of iron, the cold infusion of bark, or the infusion of gentian, cascarilla, or calombo.

When the inflammation has entirely subsided in the neighbourhood of the eruption, one of the best local applications, we have found to be the unguentum nitratis hydrargyri, diluted by the addition of ene-

third portion of simple cerate.

4.—Impetigo.

CRUSTED TETTER-HUMID TETTER-SCALL.

An incrustation of an umber, seinna brown, or olive colour, appearing either in defined patches, (figurata,) or scattered over the surface,

(sparsa.)

This eruption appears in the form of minute pustules, collected together in clusters, or dispersed irregularly over the surface. It generally occurs upon the extremities; the clusters of pustules being usually smaller and more circular on the upper, and larger, oval, and

more irregular upon the lower.

The pustules appear either upon an inflamed surface, of from two to four days' duration, or in clusters, with a defined inflamed margin, and are accompanied with heat and smarting, in proportion to the extent and intensity of the inflammation. The pustules are slightly elevated, and, in two or three days after their formation, burst and discharge their contents, leaving a red and shining surface; the matter being evacuated through numerous minute orifices. When the pustules appear in clusters, a crust is soon formed by the inspissation of the matter, from beneath which there is a constant ozing of a thin fluid:—around the edges of the crusts fresh pustules often appear.

When, from neglect or mismanagement, the disease is allowed to proceed, it may extend over the whole limb, which becomes encased in an almost continuous rugose covering. (I. Scabida.) The crust assumes a greyish brown colour, surrounded by a lake-coloured margin. There is considerable heat and itching in the limb, and its motions are impeded, or completely obstructed. After a time, the incrustation presents deep cracks or fissures, through which the matter exudes, and increases the thickness of the scabrous coating of the limb. When the disease extends to the hands or feet, an ulceration of a purplish hue takes place around the root of the nail, which often drops off, and is succeeded by another of an irregular form.

The crythematous inflammation surrounding the cruption, increasing in intensity, will occasionally give rise to slight vesications; (*I. crysipelatoides*;) and in these cases, the sub-cutaneous cellular membrane becoming involved in disease, the affection is one of considerable

severity and danger.

The crusts in impetigo may separate as early as the end of two weeks, or not until the termination of four or five. The healing process generally commences at the centre of the patches, and extends towards the circumference. On the dull, crimson surface, left by the separation of the crusts, small, elevated spots, occasionally occur, apparently vesicular, but in reality formed by indurated follicles.

Impetigo is often combined with other forms of eruptive disease thus, eczematous vesicles are often interspersed; (Eczema impetignodes;) these are attended with little redness, but by great irritation,

heat, and itching.

The incrustations of impetigo differ from those of porrigo, by

being slower of inspissation, more circular, thinner, browner, and less adherent, and by their occurring, most generally, upon the extremities; the matter discharged is also purulent and glutinous—that of impetigo more thin and ichorous. The interspersion of vesicles causes some resemblance between impetigo and lymphatic scabies; but the vesicles of the former are slower in their progress, attended rather with heat and smarting, than itching; while the cuticle is redder and more fissured, and the ichorous exudation more copious than in scabies.

In mild cases, a simple, unirritating diet, a mercurial purgative, followed by the sulphate of magnesia, or magnesia and precipitated sulphur, with the local application of lotions of tepid water, or some mild, mucilaginous fluid, or a thin bread-and-milk poultice, with the occasional use of a watery solution of opium, comprises the whole treatment that is necessary. If any derangement of the digestive organs exists, this should be removed by an appropriate treatment. When the local inflammation in the neighbourhood of the eruption is severe and extensive, especially in plethoric habits, bleeding by leeches, or from the arm, will be demanded, with saline purgatives, and a very restricted diet; the inflamed part being covered with a soft linen rag, wet with the liq. plumb. acet. dilut. In cases attended with considerable irritation, a few drops of the tineture of hyosciamus may be given, two or three times a day; or a pill composed of from one to two grains of the extract of hyosciamus, with the third of a grain of ipecacuanha, and one or two of carbonate of soda, may be given at bed-time.

In the more severe forms of the disease, one of the best local applications is the hydrocyanic acid, combined with alcohol, and applied, by keeping the parts covered with portions of linen constantly wet with the mixture; care being taken to remove, entirely, by frequent ablutions with tepid water, the morbid secretions, so as to admit the lotion to be applied directly to the diseased surface. Nothing, we are assured, is more efficacious in subduing the irritation accompanying the eruption; perseveringly employed, it will sometimes rapidly

remove every vestige of the diseasc. (Plumbe.)

^aR-Acid. hydrocianic. Ziij. Aq. destil. Zvijss. Aleohol. Zss.-M.

In the more obstinate cases, the internal exhibition of sulphur, or the sulphuret of potassa, from five to ten grains, three times a day, in milk,—the decoction of dulcamara,—Plummer's pill, or the hydrargy-rum eum creta—with the external use of the sulphur baths, or sulphur

vapour baths, should be resorted to.

When, from the long continuance of the disease, a degree of debility ensues, the decoction of sarsaparilla, or the infusion of gentian, cascarilla, or calombo, with the hydrochloric acid, may be resorted to. A pure, fresh air, and the utmost cleanliness of person, are important in all cases.

ERUPTIONS CHIEFLY CONNECTED WITH GASTRO-ENTERIC IRRITATION.

5.—Erythema.

A slight continuous redness of the skin, varying in extent and shape, and continuing from two or three, to ten or twelve days. It may occur in patches, successively on the arms, neck, breast, and face. (E. fugax.) This variety is usually observed in the progress of febrile diseases, or at the period of dentition; or it may be produced by slight irritations of the digestive organs. In other cases, the eruption appears in the form of bright red, irregular patches, chiefly on the arms, neck, breast, back part of the forearm, and back of the hand. The patches are at first somewhat papulated. (E. papulatum.) The slight swelling decreases within thirty-six or forty-eight hours; but the redness continues somewhat longer, and assumes, gradually, a bluish tint. The general disorder is usually trifling, though it is sometimes attended by symptoms of depression, and a quick, irritated pulse. The eruption sometimes assumes the form of a rose-coloured tuberculated swelling; (E. tuberculatum;) or of a raised, indurated efflorescence: this variety generally continues seven or eight days, and is attended by considerable heat of the skin, and some degree of febrile excitement. Erythema frequently occurs in large oval patches, of a deep red colour, upon the anterior part of the leg, in females towards the coming on of the menses, and in boys of a lymphatic temperament. The patches vary in number in different cases, and rise gradually above the level of the skin, (E. nodosum,) and are more or less painful when touched. They soften and subside in the course of eight or ten days; the redness slowly disappears, assuming in its decline a whitish tint. The tumours never suppurate. Erythema sometimes commences on the face, by a small, circular, red spot, slightly papulous, which gradually extends in circumference, and may, in this way, spread over the whole face. (E. centrifugum.) The patches are usually about an inch in diameter:—there is considerable redness as well as heat, principally at their margins, which are elevated, whilst the centre is depressed, and of the natural colour of the skin. They are attended with neither pain nor itching, and generally leave a slight depression of the part affected. The disease is generally of some continuance. (Biett.)

Erythema may be produced, in children of a robust and plethoric habit, by external irritation: it is more generally dependent upon some affection of the alimentary canal. Certain articles of diet, of an indigestible or unwholesome quality, will, in some constitutions, cause its sudden appearance: it occasionally occurs upon the use of some medicinal substances:—as rhubarb, balsam of copaiba, opium, &c. The cruption in these cases is generally of short duration. When it results from gastro-intestinal disease, it is commonly more severe and of longer duration. In languid and unhealthy constitutions, the crup-

tion sometimes assumes a deep crimson, or a dull, dark purple hue, and is accompanied by symptoms of a typhoid character. (Dendy.)

In the slighter cases of erythema, little else is required, in the way of treatment, excepting a removal of the exciting cause, a proper regulation of diet, mild aperients, and the tepid or warm bath; when the eruption is attended with considerable irritation, heat, and itching, dusting the part with dry powdered starch, or bathing it frequently with tepid water, or any simple, mucilaginous wash, will usually afford prompt relief. When the disease has arisen from an overloaded state of the stomach, or improper food, an emetic of ipecacuanha should be administered. If it occur during teething, the state of the gums should be inquired into, and if swollen or inflamed, freely lanced. Whatever irritation may exist in the alimentary canal should be combatted by an appropriate course of treatment. Severe cases, occurring in robust, plethoric habits, and accompanied by considerable local heat, pain and swelling, with symptoms of febrile excitement, will demand the application of leeches, or even bleeding from the arm, with saline purgatives, a restricted diet, cooling lotions to the part affected; the patient, at the same time, being kept quiet and free from excitement. In languid habits, a course of mild alteratives, and light vegetable tonics, should be prescribed, with pure, fresh air, a nourishing diet, of plain, digestible food, and the daily use of the warm bath, followed by friction to the surface. At the close of all severe cases, light tonics will be proper.

6.-Eczema.

PRICKLY HEAT.

An eruption of small, pearl-coloured, or brownish-coloured pink vesicles, with a very light rose-coloured base, preceded by a sense of heat or tingling. The delicate and irritable skins of children, render them peculiarly liable to the production of this form of vesicular eruption, on parts exposed, for a very short period, to the heat of the sun. (E. solare.) The application of heat from any other source, will also produce the disease; and it frequently arises from irritations, seated in the alimentary canal. When the vesicles of eczema occur between the fingers, especially if aggravated by scratching, they may be mistaken for those of scabies; but, the suddenness of the eruption, the more pointed vesicle, and the sensation of smarting, rather than itching, readily distinguish it from scabies.

When the eruption is more generally and extensively diffused, the vesicles occurring in closer proximity to each other, with their interstices of a bright red colour, it constitutes the eczema rubrum. Between the sixth and eighth days, and sometimes earlier, the redness diminishes, the serosity is absorbed, the vesicles shrivel up, and a slight desquamation takes place, leaving, however, the skin redder than natural, and presenting, when carefully examined, a number of minute, round spots, surrounded by a thin, white, ragged rim of cuti-

ele, which indicates the extent of desquamation of each vesicle. The milder cases of eczema may quickly subside, without desquamation, the lymph of the vesicles becoming opaque, and being then absorbed; in other cases, new vesicles form, of larger dimensions, upon rupture of which, a brownish scab will form, leaving the skin in a rugose state, and in the more aggravated cases, producing febrile symptoms, and general derangement of health, from the extent and persistence of the irritation. (E. impetiginodes.) By long and repeated application of the exciting cause, the eruption may become more permanent, and less inclined to yield to simple remedies. (Chronic eczema.) The chronic form is, however, of unfrequent occurrence in children.

Vesicles resembling those of eczema, are often produced, by the

application to the skin of plasters, ointments, and poultices.

In the slighter cases, the treatment will consist in the removal of the exciting cause, mild aperients, a well regulated diet, and the warm or tepid bath, with slightly acidulated barley or toast water for As local applications, tepid water, mucilaginous washes, or simple bread poultices are the best. Where there exists gastro-intestinal disease, this will demand its appropriate remedies. In the acute stage of the more severe forms, occurring in robust and plethoric habits, leeches, as well as bleeding from the arm, with saline cathartics, diaphoretics, and the antiphlogistic regimen generally, will be often required. In protracted cases, the alkaline bath may be tried; or, as a local application, the hydrocyanic acid and alcohol, as directed in impetigo, with the cautious internal use of dulcamara. When great irritation, and loss of sleep occur, the tincture of hyosciamus may be given during the day, or an opiate at bed-time. In the impetiginous form, when the eruption has become chronic, a weak solution of alum, or of the acetate or sulphate of zinc, in diluted alcohol, will be found useful.

In all cases, the patient should be exposed to a pure atmosphere; his linen should be repeatedly changed, and friction of the surface

carefully avoided.

When, on the subsidence of the eruption, the patient remains in a languid, debilitated state, light tonics should be administered, with a plain, wholesome, nutritious diet: change of air, under such circumstances, will be advisable.

7.—Urticaria—Nettle Rash.

An eruption of red, inflamed patches, irregularly distributed upon different, and often distant parts of the body;—sometimes small in extent and number, and at others, occupying a considerable portion of the skin. At the centre of each patch, is situated a white irregularly-formed spot, sometimes long and narrow, at others, broad or round, and considerably elevated above the surrounding cuticle, and generally attended with a severe sense of itching, smarting, and tingling. The margin of the colourless tumour is very irregular, and when the finger is passed lightly over it, it presents to the touch great

irregularity of surface. The tumour in the smaller patches of inflammation, is not unfrequently in the form of small, distinct, circular tubercles, about the size of a spangle; but when several occur upon the same spot, they generally coalesce, and form a lengthened stroke or wheal. The larger spots or wheals are mostly formed by the clustering together of a number of the circular white tubercles; and in proportion to their size, they are surrounded by a more or less vivid inflammatory redness, and a corresponding degree of heat, itching, and smarting attend them. When punctured with a finely-pointed instrument, there escapes from the white tubercles, a thin, transparent fluid, and the swelling immediately disappears. (Plumbe.)

The eruption, in the simple forms of the disease, seldom continues long, and is frequently so evanescent, as to disappear, after a few moments' continuance, from one part of the body, leaving no vestige of its existence; while, almost immediately afterwards, a distant part will be found occupied by it to a considerable extent. (U. evan-

ida.)

In very severe cases, suddenly produced by eating certain kinds of food, the tumefaction about the neck and face is often very considerable; not unfrequently closing up the eyes, and obliterating every vestige of the natural features. Even in these cases, the irritation and tumefaction will begin to subside at the end of thirty-six or forty-eight

The symptoms of the febrile form of urticaria, (*U. febrilis*,), are much more violent, and its duration longer. In this form, the eruption is preceded by pain and sickness of stomach, headache, great langour or faintness—a sense of drowsiness and anxiety; there is increased quickness of pulse, and a white coating upon the tongue. In two days, or later, a coldness and shivering is experienced, and patches of a vivid red, or even crimson hue, appear upon various parts of the surface, attended with a most troublesome itching or tingling, greatly increased when the patient is in bed, or heated from any cause. On the appearance of the eruption, the pain and sickness of the stomach are in in general relieved. The patches often coalesce, so as to produce a continuous redness, particularly on the shoulders, loins, nates, thighs, and about the knees. They are often elevated above the surrounding cuticle, and form dense tumours, with a hard, distinct border the interstices being of a dull white colour. (U. tuberosa.) The patches appear and disappear irregularly, first on one part, then on another; they may be excited on any part of the skin, by strong friction, or scratching. When the patches are numerous, the face or the limb occupied by them, appears tense, and considerably swollen. Towards the close of the disease, the evelids are often red, and tumefied, and swelling and inflammation occur on the sides of the feet.

During the day, the redness of the eruption fades, and the wheals, in general, subside; but both increase, with a slight febrile exacerba-

tion, in the evening.

As the eruption declines, the tongue becomes clean, the pulse be-

comes natural, and the diseased state of the functions generally, ceases: the efflorescence assumes a light purple or pink appearance, and then gradually disappears, being followed by a slight exfoliation of the cutiele. (Willan.)

The whole duration of the febrile nettle rash is from seven to eight

days.

The exciting causes of urticaria are various;—emotions of the mind; exposure to excessive heat, or over exertion; particular kinds of food or drink, in certain constitutions; as almonds, kernels of nuts, mushrooms, cheese, eucumbers, pic-crust, honey, different kinds of fruit, or food rendered unwholesome from being out of season, or having undergone certain changes, as muscles, clams, oysters, lobsters, crabs, and certain kinds of fish, or fish in which putrefaction has commenced. In individuals whose skins are peculiarly irritable, slight external irritations will give rise to it: in such, a full habit of body, or simple excess in any kind of food, will act as its exciting cause.

The treatment of urticaria will depend upon the nature of the attack, and in some degree, also, upon the nature of the exciting cause. The milder cases require little else than rest, a cooling regimen, diluent drinks, gentle aperients, and tepid baths. Where it has arisen from the ingestion of articles of food, a brisk emetic, (the sulphate of copper,) followed by a dose of purgative medicine, (calomel and jalap,) should be administered; and if accompanied with severe nervous symptoms, the sulphuric ether, in doses of twenty, thirty, or forty drops, given every half hour, will generally be found very efficacious. When it becomes chronic, or repeatedly occurs in the same individual, great attention should be paid to the articles of food that are eaten, omitting first one, and then another, until the one by which the cruption is produced is ascertained. (Willan.) In chronic cases, the alkaline baths will often be found useful; or, occasional laxatives, the mineral acids, and vapour baths.

In the febrile form, particularly when occurring in robust, plethoric habits, leeches, or the lancet, will often be required, with saline purgatives, and nitre, a restricted diet, and the antiphlogistic regimen

generally.

When, from a sudden disappearance of the eruption, siekness and pain of the stomack, or faintness; or symptoms of some local affection, with an increase of the general febrile symptoms ensue, with delirium or coma:—in the first instance, the warm bath, sinapisms to the extremities, and small doses of ether or ammonia, will be required, and in the latter, bleeding, blisters, and pediluvia.

When urtiearia occurs in debilitated constitutions, or when it assumes an intermittent type, the bark or sulphate of quinia must be prescribed; and should this fail, much benefit will, in many cases, be obtained from the use of the solution of arsenite of potassa, given in

small doses, gradually increased.

8.—Erysipelas.

The proper infantile erysipelas of medical writers, is happily of unfrequent occurrence in this country. It usually occurs within a few days after birth, and is, in many instances, of intra-uterine origin. It seldom makes its appearance after the fourth or fifth week, though a few cases have been observed as late as the sixth or even twelfth month. (Dewees, Billard.) It commonly commences on the lower parts of the body, particularly about the nates, groins, and umbilicus, with a small, dull crimson blush, which quickly changes to a purplish or livid hue; in new born infants it may have, occasionally, its origin in umbilical phlebitis. (Meckel, Osiander.) The inflammation spreads gradually and irregularly over the abdomen, along the back, and on the inside of the thighs; the parts occupied by the inflammation are swollen, hard, and extremely tender to the touch, as indicated by the movements and cries of the child. Generally at the end of twenty-four hours, there appear upon the inflamed surface a few scattered vesicles, with inflamed livid bases, which terminate rapidly in gangrenous ulcerations. The vesicles appear in some cases upon the first occurrence of the inflammation, and in others, not until this has continued several days; occasionally vesication does not take place, and the disease is then of little danger or duration, the inflammation subsiding in two or three days. In instances in which the inflammation is not very intense, it spreads rapidly in one direction, while the disease ceases in the parts originally affected; or suddenly disappearing in the part first attacked, it speedily reappears on some other, and perhaps remote portion of the surface, and in this manner, may successively invade every part of the skin.

In many cases, the skin surrounding the inflammation, to the distance of nearly an inch from its margin, is hard to the touch, and cannot be pinched up or moved over the subjacent parts, as in a state of health. In the majority of cases, this results from the infiltration of the cellular membrane, surrounding the inflammation, with serum.

When vesications appear early, the gangrene generally spreads rapidly, and the case soon acquires a very dangerous and hopeless character; this is more apt to be the case when the inflammation occurs upon the abdomen; on the extremities and nates it is more liable to terminate in suppuration, with deep-seated ulceration, and destruction of the sub-cutaneous cellular structure. The pus formed is of a greyish colour, and of a very thin sanious character; it penetrates through the cellular membrane, beneath the skin, and between the muscles; small portions of the skin finally slough off, and give exit to the confined matter, mixed with flocculi and large shreds of sphacellated cellular membrane.

In some rare instances the disease has been known to continue for fourteen or fifteen days, with but little vesication, and no diffused suppuration. In the more violent cases, the cessation of the gangrene is marked, in the early stages, by a white line of demarcation; and in

the latter stages of the more protracted cases, by a secretion of healthy pus taking the place of the ichorous or sanious discharge.

In the commencement of the disease, there is considerable febrile reaction, which, upon the occurrence of vesication, assumes a low typhoid character, and upon the approach of suppuration, there is always more or less depression of the vital energies—though, in many cases, the tendency to sinking is evident from the commencement of the attack.

Few cases occur, in which the indications of gastro-intestinal disease are wholly absent. There is generally more or less tenderness of the epigastrium—griping cholicy pains—constipation, or frequent discharges from the bowels, of a thin, grass-green fluid, preceded and accompanied with griping. The surface of the body not occupied by the erysipelatous inflammation, often presents a slightly jaundiced

appearance, and the urine usually contains bile.

In older and more robust children, erysipelas presents itself under the same forms as in the adult. A bright scarlet, shining efflorescence appears upon the skin, preceded, for a day or two, by heat, and a sense of tingling, and some degree of febrile reaction. The disease occasionally declines by the third or fourth day, the skin assuming a yellowish hue, and desquamating. In other instances, the disease runs a more protracted course; vesications, more or less extensive, form upon the inflamed surface, which sometimes become filled with a purulent fluid. The vesications rupture in the course of two or three days, and give discharge to a thin, glutinous fluid. In other cases, the inflammation extends more deeply, and is attended with symptoms of greater severity. Rigors and severe febrile reaction precede the local disease, which is attended with considerable swelling of an ædematous character: suppuration early occurs, and a thin, purulent sanies is formed, which travels along the cellular structure, beneath the skin, and among the muscles and tendons, mixed often with clots of thin, grumous blood. The disease is now very liable to assume a gangrenous character, unless energetically treated in its early stages—attended with great depression of the vital energies, and most commonly terminating in death. In the acute stage, inflammation of the cutaneous vessels is occasionally observed, and often purulent depositions take place, in the serous cavities, and in the lungs.

In the examinations that have been made, of infants who have died from crysipelas, phlebitis of the umbilical vessels has been occasionally met with; (Meckel, Osiander, Wolff;) we observed it in two cases. Inflammation of the peritoneum, with puruloid or serous effusion into the cavity of the abdomen, was more commonly observed. (Bühl.) Pleuritic inflammation, with effusion, was more rare—pneumonia, vesicular, lobar, and lobular, was very frequent; enteritis was the most common morbid appearance, although gastro-enteritis was

not unfrequent. (Billard.)

Various opinions have been advanced in regard to the causes of

infantile erysipelas; so far as our own observations extend, the disease would appear to originate, almost exclusively, in infants exposed to a confined and impure atmosphere, or in the nursing of whom, proper attention is not paid to cleanliness of person, bedding, and clothing—in young children who are allowed to lay for hours with diapers embued with excrement and urine, or if their diapers are removed more frequently, have them hastily changed, without the surface being properly washed and dried, for others that have been worn already, and merely dried. Bad nutriment, no doubt, contributes, in the majority of cases, in the production of the disease. Erysipelas of infants very commonly occurs during the prevalence of epidemic puerperal fever—children of mothers who become affected with the fever, are often born with erysipelatous inflammation; others are attacked almost immediately after birth. Whether, in these cases, the disease is to be referred to a morbid matter applied to the skin in the womb, or to the same epidemic influence which gives rise to the

disease of the parent, it is difficult to say.

In the treatment of erysinelas, as it occurs during infancy and childhood, the nature of our remedies must be governed by the stage of the disease, and the character of the symptoms in each case. In a large number of cases, every remedy of a debilitating character is strongly counter-indicated, and the early symptoms of prostration which present themselves, force us at once to resort to measures calculated to support the patient's strength. In every instance, it will be proper to pay attention, from the onset of the disease, to the condition of the bowels. A grain or two of calomel, followed in a few hours by a teaspoonful of castor oil, or laxative enemata, will be sufficient to procure a free evacuation of the intestines, without much irritation, and they may be kept in a regular state subsequently, by the exhibition, every three hours, of divided doses of calomel, combined with ipecacuanha and extract of hyosciamusa—the addition of the latter is calculated to prevent or allay irritation, without interfering with the aperient action of the other articles. When the skin is warm and dry, the liquor ammoniæ acetatis alone, or combined with antimonial wine, will often prove beneficial. Under the same circumstances, the occasional use of the warm or tepid bath will prove highly advantageous. If with a hot and dry skin, there should occur symptoms of cerebral irritation, as intolerance of light, screaming, or convulsions, a leech or two should be applied to the temples, cold applications to the scalp—the bowels should be freely opened by castor oil, with the addition of turpentine and warm pediluvia, should be resorted to.

^aR.—Calomel, gr. iij.—iv.
Ipecac. pulv. gr. iij.
Carb. sodæ, gr. xij.
Ext. hyosciami, gr. iv.—vi.—M.
f. ch. No. xij.,
One for a dose.

^bR.—Liquor, acetat, ammon, ʒij,
Vin, antimonii, ৠ xxxv.—xlv.
Aq. cort, aurant, ʒjj.
Sacchar, puris, ʒij.—M
Ten to thirty drops every two or three hours,
may be given.

There cannot be a doubt that cases of erysipelas frequently occur,

in young children, which in their early stage are accompanied by symptoms that indicate the use of local depletion, and that in these, a few leeches, applied upon the sound skin in the neighbourhood of the inflamed parts, will prove positively beneficial; we have repeatedly met with such cases, and proved the good effects of the practice. Judgment is required, to discriminate the kind of cases which are likely to be benefitted by local depletion, and to determine to what extent it may be prudently carried—as a general rule, a very moderate abstraction of blood will be sufficient.

When a tendency to gangrene is obvious, and the disease assumes a low typhoid character, it will be necessary to resort, at once, to the use of the carbonate of ammonia, in doses adapted to the age of the patient, and the urgency of the symptoms; and, at the same time, the child should be nourished at the breast of a healthy nurse, or, if weaned, its diet should consist of animal jellies dissolved in water, beef tea, chicken water, or sago. It is hardly necessary to say, that our chance of success in the treatment of these cases will be greatly diminished, unless we have it in our power to remove the patient to a healthy situation, where he may enjoy the tonic influence of a pure, free atmosphere. Where the symptoms of prostration are more considerable, we may combine the use of the ammonia with the sulphate of quinia and the extract of hyosciamus.

A.—Sulph. quiniæ, gr. ij.—iij.
Extract hyoscianni, gr. ij.—iij.
Magnesiæ calcinat. gr. xxxvj.—M. f. ch. No. xij.
Onc to be given for a dose every two or three hours.

Should diarrhoa ensue after suppuration has taken place, it should be immediately checked by the cretaceous mixture, with the addition of tincture of kino and laudanum; or, if this should not succeed, the acetate of lead, ipecacuanha, and opium may be substituted.

*R.—Acetat. plumbi, gr. xij.

Ipeeac. pulv. gr. iv.

Opii pulv. gr. j.—M. f. ch. No. xiv.

One to be given for a dose, three times a day.

When the discharges from the bowels are of a vitiated character, or attended with griping or cholicy pains, a few drops of turpentine, three times a day, will be found a very valuable remedy. The turpentine may be combined with the tincture of kino and laudanum.^a

*R.—Aq. cinnamon, Iiij.
Tinc. kino, Iij.
Spir. terebenth. Ij.
Magnesiæ calc. gr. viij.—M.
A teaspoonful may be given at a time, three times a day, or oftener.

Various local applications have been directed, by some practitioners, as highly beneficial in the treatment of infantile erysipelas, while by others they are denounced as invariably injurious. Washing the parts frequently with tepid water, or some mucilaginous fluid, will in many cases, be productive of very great relief to the patient, and we

think that we have seen an abatement of the inflammation take place. under their use—in the intervals, the parts may be dusted with powdered starch, or covered with carded cotton. When the disease is attended with considerable distension of the skin, a lotion composed of the acctate of lead and subcarbonate of ammonia, has been highly recommended. (*Peart.*) Other washes have been proposed as occasionally very beneficial, but of the effects of which we have no experience—as the camphorated tineture, applied by covering the inflamed parts with rags wet with it; a solution of corrosive sublimate, three grains to an ounce of water, applied in the same manner; a solution of nitrate of silver, three grains to the ounce of water, similarly applied. Applying a very strong solution of the nitrate of silver, by means of a pencil, upon the sound skin, for about an inch around the margin of the inflammation, one or two times, has been said to arrest the progress of the disease. The chloride of lime, in solution, half a drachm to the pint of water, and applied by folds of linen saturated with it, is said to be one of the best washes, in cases which early show a tendency to gangrene. A solution of the sulphate of iron, half an ounce to eight ounces of water, has been employed with advantage. (Velpeau.) This is said to have subdued erysipelatous inflammation in two days. We have used a wash of acetate of lead, ten grains to the ounce of water, in many cases of infantile erysipelas, with the very best effects, but our favourite application, in the ordinary cases of erysipelas occurring in children, is fresh lard, with the addition of acetate of lead, in the proportion of ten grains to the ounce. To those cases which exhibit, from the first, a decided tendency to gangrene, this application is not adapted. The local remedies just recited are to be employed in the early stage, previous to the rupture of the vesications, and to the occurrence of suppuration or gangrene. Among the local remedies which appear to be the most generally applicable to erysipelas occurring in children, is a blister, sufficiently large to extend over the inflamed skin, and for a short distance beyond it; after vesication has been produced, the serum should be evacuated, and the vesicated surface dressed with fresh lard. When the crysipelas occurs upon the extremities, a blister applied around the limb, beyond the inflamed surface, will frequently arrest the progress of the inflammation in that direction. (Physick, Dewees, Eberle.) In the cases in which we have resorted to blistering, we have usually applied strips of leather, spread with blistering ointment, along the edges of the inflamed part, partly on the latter, and partly upon the sound skin, and at the end of three hours, have removed them, and immediately covered the parts with a soft, emollient poultice, with the addition of lard; the most important result which we have derived from the use of blisters, is the prevention of the spread of the disease.

> *R.—Acetat. plumbi, Sub. carb. ammoniæ, åå. Iss. Aquæ, Iviij.—M.

The mercurial ointment has been strongly recommended in the treatment of infantile erysipelas, as well as in the erysipelas of adults. (Dewees, Metmeyr.) The mode in which it is applied, is to cover the inflamed surface with a piece of soft linen, with the ointment spread upon it; we know nothing of the effects of this remedy from our own

experience, having never employed it.

In many cases attended with an intolerable sensation of burning, we have seen some good to result from the use, as a lotion to the inflamed part, of a watery solution of opium. In those instances in which the disease is attended with considerable restlessness, and when the patient is prevented from sleeping at night, a few grains of the Dover's powder, or a dose of the camphorated tincture of opium, adapted to the

age of the patient, should be given at night.

When erysipelas terminates in gangrene, washes of a solution of the chlorides of lime or soda, of a few drops of creasote, diffused in water, or of a strong decoction of galls, or black oak bark, should be immediately employed; or the sphacelated surface may be covered with either the charcoal or yeast poultice: pencilling the edges of the gangrenous ulceration which often ensues, with the creasote wash, or the balsam of tolu, will occasionally arrest its progress. We have seen, we think, good effects result, in some instances, from washing the gangrenous surface with a very strong solution of the sulphate of

copper.

In all cases in which the cellular membrane is involved in disease, free incisions should be early made, as well to unload the vessels, relieve the swelling and distention, and give exit to the purulent fluid and dead portions of cellular structure. The pus, if allowed to remain, by making its way beneath the skin, and between the muscles and tendons, has a tendency to increase the extent of the disease, and to cause the death of the patient, by the irritation and exhaustion to which it gives rise; after the incisions, the parts should be covered with a soft emollient poultice. The patient, or the affected limb, should be kept at rest, and the inflamed part, if possible, somewhat elevated, so that the flow of the blood from it may be facilitated by gravity.

Should indications of pulmonary or cerebral disease occur in cases

of erysipelas, these will demand their appropriate remedies.

When convalescence has been established, and a degree of weakness and languor remains, some light mineral tonic, with the mineral acids, should be administered, and the child should be allowed a nutritious, but mild and easily digested diet; he should be immersed daily in the warm or tepid bath, and enjoy a dry, fresh, wholesome atmosphere.

9 .- Phlegmonous Tumours.

These occur on various parts of the body, and in different tissues, either as indications of internal disease, or of some constitutional

derangement. They are often critical when they occur at the decline of acute febrile diseases.

They have received a great variety of appellations, but may all

be included under the general denomination, phlegmon.

Of the cutis, there are two species of phlegmon; one involves the cutis and the cellular tissue beneath, often to a great extent; while the other is confined to, and only involves, in the suppurative process,

the substance of the cutis.

The first appears in the form of a painful, dark red, circumscribed tumour, of a somewhat conical form, excessively painful to the touch, and often attended with more or less febrile excitement. At the apex of the cone, a little white speck or slough is generally observed, which, when picked off, is not followed by the discharge of matter, but leaves an excavation of a corresponding size and shape. It is very probable that matter is formed in this species of phlegmon, within a very few days after the occurrence of the disease, deeply imbedded in the cutis, and is prevented from making its way to the surface, in consequence of the thickening of the superincumbent

structure, from adhesive inflammation. (Plumbe.)

The second species of phlegmon is in the form of a dark red, lenticular swelling, very painful to the touch, and slow in maturating. When pressure is applied to the sides of one of these small tumours, soon after suppuration commences, a transparent serum exudes. Pus first appears in a minute yellow elevation on the centre of the tumour, the surrounding parts of the latter being hard, solid and painful. The abscess seldom gives discharge to much matter, and in most cases, where the inflammation is not very obvious at the surface, a small portion of the cutis is destroyed, and comes away in the form of a slough. After the excavation formed by the separation of the latter, is filled up, and the inflammation has subsided, a thickened and hardened condition of the part, which is of a bluish colour, remains, and is only slowly removed. These phlegmons appear in the greatest number upon some portion of the trunk, particularly the abdomen, while the first species occurs most commonly on the arms, thighs, and nates. (Fosbrooke, Plumbe.) We have very frequently seen the latter in children of a gross habit of body, upon the back part of the neck, and between the shoulders.

The second species of phlegmon is always of a chronic character, and very generally a new crop makes its appearance as fast as the first subsides, and thus continue to occur until the diseased condition of the system, by which the phlegmon is produced, is overcome.

Children of full, gross habits, and fed upon coarse and rich food, are most subject to phlegmonous tumours of the skin. They are more common during the spring and summer than at the other seasons of the year. When extensive, they often give rise to a greater or less degree of febrile excitement.

The treatment of the disease consists in placing the patient upon a plain vegetable diet; the evacuation of the bowels by a dose of cal-

omel, followed by a saline cathartic, and freely exposing him to a fresh, pure atmosphere; and when the phlegmonous tumour is very extensive, hard and painful, particularly when accompanied by febrile symptoms, the application of a few lecches to its centre. The early suppuration of the tumour should be encouraged by the application of large emollient poultices, of which the best are those composed of the crumb of stale bread, or lintseed meal, boiled in milk, with the addition of lard; when suppuration has taken place, and the matter does not readily find its way to the surface, the abscess may be opened with a lancet, and the application of the poultices continued; in general, in a few days, the excavation will be filled up with healthy granulations, and completely cicatrized. If, after the abscess bursts or is opened, it exhibits no disposition to heal, it should be dressed with the common resinous ointment. In the case of the second species of phlegmon, the use of the sulphuric acid internally, and continued for a length of time, has been said to prove peculiarly efficacious. It should be used largely diluted with water, and in as large doses as is compatible with the age of the patient. Under its use we are assured that the pain of the tumors is deadened, and the latter themselves gradually absorbed, without suppuration. (Fos-An alterative course of treatment, continued for many weeks, with the use of the compound decoction of sarsaparilla, will, in general, be required.

In children subject to boils, the habitual diet should be light, and chiefly farinaccous; they should use daily exercise in the open air,

and be daily immersed in the warm or tepid bath.

Children are often affected with a phlegmonous inflammation of the glands of the neck and groin, unconnected with indications of scrophulous disease, and occurring under the same circumstances as phlegmon of the skin.

Their treatment differs in nothing from that recommended for the more extensive forms of the latter; low diet, saline purgatives, and the application of leeches, and of cooling applications when a considerable degree of inflammation is present; and when the tendency to suppuration is evident, emollient poultices frequently repeated.

In many cases, the inflammation and swelling of the glands is of an indolent character, and will often remain for a considerable time, without either increase or diminution. In these cases, we have generally found the application of a blister, to cause a rapid suppuration

to ensue.

When an abscess forms, it should be early opened by a free incision, and the application of the poultices continued, until the cavity is filled up by granulations, and a disposition to cicatrization is apparent.

A form of phlegmonous abscess is of common occurrence in children, which we have not seen noticed by any writer. It is consequent upon a deep-seated inflammation beneath the fascia, upon the anterior part of the thigh, or upon the lower part of the back; sometimes, immediately above the hip; it may, perhaps, occur in other parts,

32

but the above are the only ones, in which we have seen it. The disease generally occurs in children of a lymphatic temperament. The first symptoms are usually deep seated, dull pains, at the seat of the inflammation, which are often increased at night, and always upon the application of pressure. If the inflammation occur in the thigh, or upon the hip, the child walks lame; in many cases, when in the latter situation, the symptoms bear a strong resemblance to those of morbus coxarius, for which it may be mistaken by an inexperienced physician. There is at first no redness or increased heat of the part, and but little or no swelling; -by degrees, however, a swelling is perceived, which gradually increases in extent, and finally, upon a cautious examination, a fluctuation of matter may be detected. The skin over the tumor is smooth and shining, and very tense, and a deepseated throbbing pain, increased by paroxysms, is compained of;—it is often so severe as to deprive the child of its rest. In children, over four years of age, we have seen, after suppuration has occurred, a well-marked hectic fever, with two exacerbations in the course of the twenty-four hours, profuse perspirations at night, and occasionally colloquative diarrhea. We have never seen any disposition in these abscesses, to approach the surface; this has usually been prevented by the matter forming beneath the aponeuroses or fascia enveloping the muscles; occasionally, the matter in the thigh has travelled downwards, and given rise to a swelling in the neighbourhood of the knee; and in one case, in which the abscess formed in the lower part of the back, the matter found its way to the groin, where it formed a fluctuating tumor of considerable size. When the contents of these abscesses is discharged by an incision, it is of a healthy appearance, though occasionally containing flocculi, and large fragments of dead cellular matter.

The treatment we have pursued, in these cases, is, in the early stage, the application of leeches over the seat of the inflammation, followed by blisters—a dose of calomel, succeeded by saline cathartics, and if the discharges from the bowels are of an unhealthy appearance, the administration, three or four times a day, of small doses of calomel, in combination with ipecacuanha, extract of hyosciamus, and magnesia. The moment matter is formed, we consider it all-important to make a free incision down to the abscess, and then to dress with emollient poultices. This gives relief to the pain, and the patient, in general, very quickly recovers his usual health; though, in cases in which there exists considerable exhaustion, the administration of some light

tonic will be proper.

In one case, occurring in a lad, between eight and nine years of age, attended with hectic fever, night sweats, and a profuse diarrhea, the stoools being thin, dark coloured, and very fætid, upon a free incision being made to give discharge to the contents of the abscess, which was seated upon the anterior surface of the left thigh, a manifest improvement, in the condition of the patient, was almost immediately manifested. For the relief of the diarrhea, a powder com-

posed of the sixth of a grain of sulphate of copper, subsequently increased to one-fourth of a grain, the third of a grain of opium, and two grains of the extract of quinia, was administered every three hours; on the fourth day, the evacuations from the bowels were reduced to two in the twenty-four hours, of a natural appearance; all symptoms of fever were gone, and the appetite and strength of the patient considerably improved. In a week, he was able to walk about, and quickly regained his normal degree of health. The left thigh, however, remained for some time longer, less in size, and the whole limb much weaker than the other.

Inflammation followed by suppuration, frequently attacks the ciliary and follicular glands of the eye-lids, in which case a small dark red tumor forms upon the tarsal edge of one of the eye-lids, attended with some swelling and redness of the lid, redness and injection of the eye, aversion from light, and considerable soreness, increased by the motions of the eye or eye-lids, (hordeolum, stye.) The disease usually occurs under the same general circumstances as the other phlegmonous tumors; after the inflammation has continued for a shorter or longer period, a white or yellow speck forms at its centre, which, on bursting, gives discharge to a small quantity of pus, when the inflammation and swelling quickly subside, and finally disappear. It is very usual for a succession of these little phlegmonous tumors of the eyelids, to occur; no sooner one set disappears, than another makes its

appearance, and runs the same course.

When the inflammation and swelling are considerable, a leech or two should be applied to the lid, and calomel, followed by saline aperients, administered so as to procure a free discharge from the bowels; the diet being, at the same time, carefully regulated. Very warm water applied frequently to the inflamed lid, by means of a sponge, or a soft poultice of crumbs of bread and milk applied over the closed eye, may be used to promote suppuration;—as soon as this takes place, the minute abscess should be opened by means of a fine sharppointed lancet, and the stye then cautiously touched with the point of a pencil of lunar caustic. This causes the quick subsidence of whatever inflammation and swelling may remain, and prevents the induration and redness, which often continue for a considerable time, especially in children of a weakly or lymphatic temperament. Should the latter, however, occur, they may be moderated by a poultice composed of crumb of bread, a grain or two of the extract of belladonna, and the camphorated tincture; (Dendy;) or perhaps, what is better, by touching the part with lunar caustic.

A chronic inflammation of the ciliary bulbs, not unfrequently takes place, which by degrees pervades the entire ciliary circle, and, if not checked in its early stage, terminates in a chronic inflammation of the edges of the eye-lids, accompanied by a slight glutinous discharge from the ciliary glands; in time the bulbs lose their power of secreting the eye-lashes, which fall out; and the loss of these, with the permanent

red circle which surrounds the eye, causes no inconsiderable deform-

ity. (Tinea ciliaris, lippitudo, chronic stye.)

This affection most generally occurs in children of a weakly. unhealthy constitution, and of a lymphatic temperament, and is very commonly conjoined with a more or less disordered condition of the digestive organs. In the early period of the inflammation, leeches in the vicinity of the lashes, followed by the application of warm water, or soft emollient poultices, and after the disease has assumed a chronic form, the unguentum hyd. nitratis diluted, or the cautious use of the nitrate of silver. But, these local remedies will be of little service, unless attention be directed to the condition of the general health of the patient, and to the state of the digestive organs. The first should be strengthened and invigorated by a proper diet, daily exercise in the open air, the warm or tepid bath followed by friction to the surface, or by sponging the skin daily with salt water of tepid warmth, followed by friction, and by the administration of light tonics and alteratives. The healthy functions of the digestive organs should be restored by a course of treatment adapted to their particular condition, and which it is unnecessary here to particularize.

10.-Herpes.

An eruption of transparent vesicles varying in size from that of a millet seed to that of a pea; either distributed like a belt around, or partly around the body, (H. zoster, zona,) or in defined clusters, (H. phlyctanodes,) or in circular patches around an inflamed area, the surface of which desquamates as the vesicles decline; (H. circinnatus;) or, very rarely, in three or four concentric circles, or rings of varied and beautiful colours, and clevated above the surface of the surrounding skin. When herpes occur around the lips, as they often do towards the decline of catarrhal fevers, or in the course of various disorders of the digestive organs, they have been denominated herpes labialis.

Herpes occur on various parts of the body, and are generally preceded by some degree of febrile excitement, which is often so slight as scarcely to attract attention; or by pain in the epigastrium, and other symptoms of disease of the digestive organs. The fever and other symptoms, particularly languor, loss of appetite, head-ache, nausea, pain of the abdomen, heat of the surface and hurried circulation, generally remain as long as fresh vesicles continue to be produced. The abdominal pain generally pursues the course of the eruptions, being felt at the regions of the stomach, liver, &c. when they extend around the waist; or when the eruptions occur upon the shoulder, deep-seated pain of the scapula, spine, or os humeri is complained of, as they extend down the arm. (Plumbe.)

At the seat of the eruption, a bright red efflorescence first appears, accompanied by a sense of heat and tingling. The redness is distributed in patches, varying in size, and separated from each other by a

greater or less extent of the surface, preserving its natural colour. Upon the largest of these patches, near its centre, a few small vesicles appear, and still fewer, upon the adjoining patches, and upon the next, perhaps none, or only a minute pimple, which, in an hour or two, becomes a perfectly-formed vesicle. Slight pressure, at this period, produces a sensation of pricking; but, as the disease advances, it is attended with a severe smarting pain. Within twenty-four hours, the vesicles that first appeared, attain the size of small pearls, and several of them, which are the closest together, coalesce, and form a large irregular blister, the areola of inflamed skin being also increased.

The eruption extends, in an irregular line, from the part where it first commenced, to distant parts, by the occurrence of a succession of inflamed patches and vesicles, which continue to appear for four or five days; at the end of which period, the first formed vesicles become opaque, shrivel up, and terminate in a brown scab, which is gradually extended by a similar change taking place in the other vesicles of the same cluster:—the inflamed patch upon which they are situated, at the same time, acquires a bluish tint, and loses all appearance of heat and irritation. In about two weeks, from the appearance of the eruption, the scabs separate, and leave a tender discoloured state of the skin, which gradually disappears; in some cases, however, the disease is protracted to twenty or twenty-seven days.

When the constitution of the patient is much diseased, or the eruption has been improperly treated, small white sloughs occasionally form at the points occupied by the vesicles, leaving permanent pits or scars

upon the skin, after the healing process is completed.

A slight cruption of herpes, and limited in extent, is apt to assume a circular form, and hence has obtained the popular appellation of ring worm. In such cases, the vesicles are sometimes extremely minute, and they generally soon dry up, the cuticle falling off, in a few days, in the form of small exfoliations, leaving a reddened scurfy areola. This form of herpes occurs on different parts of the body, and seldom requires much attention. (Plumbe.)

Herpes labialis is seldom a very troublesome form of the disease; it generally goes through its course, in a week or ten days, the vesicles becoming first turbid and yellow, then drying up, and ultimately falling off, in the form of scales. The posterior part of the fauces is sometimes affected, when the disease appears suddenly, after checked perspiration and cold; a few vesicles being distributed upon

these parts, surrounded by an erysipelatous redness.

The causes of herpetic cruptions have not been very accurately determined. They are most common in persons of a lymphatic temperament, and are most prevalent in warm climates and seasons, and in the neighbourhood of marshes. (Tilesius.) They sometimes prevail epidemically; we have already noticed the occurrence of one variety, towards the close, or during the course of catarrhal and gastro-intestinal diseases. They are often observed in infants, during the period of dentition. Sudden suppression of perspiration—sudden

changes in dict and regimen—the habitual use of food of a fatty or oily nature, or of fish, and inattention to personal cleanliness, have been enumerated, as common exciting causes of herpes. Like erysipelas, the disease has been ascribed, by some authors, to violent paroxysms

of anger. (Schwartz, Plenck.)

The different varieties of herpes require but little treatment. It would be useless, if not dangerous, to attempt to suppress the eruption, though the tingling, smarting, aching, and burning, by which it is accompanied, may be allayed, and, in this manner, the patient rendered more comfortable, by lotions composed of a solution of acetate of lead, with a slight addition of alcohol, or by the application to the part of the ungtplumbi acetat. In the more severe cases, the strictest rest should be enjoined, with the antiphlogistic regimen generally, the tepid bath, and occasional doses of some mild aperients, as sulphur and bi-tartrate of potassa, or sulphur and magnesia; when the eruption is confined to a very small space, and the vesicles are very minute, the application of substances possessing slightly caustic or powerfully astringent properties, will often speedily effect its removal, as the juice of the green rind of walnuts, tincture of galls, or a strong solution of sulphate of copper; but, under all other circumstances, such applications will prove decidedly injurious. (*Pumbe.*)

If each vesicle is carefully *punctured*, so as to allow the escape of the fluid, the pain will be much diminished, and the irritation more speedily subside; but the vesicles must not be cut, or rudely broken.

It is said, that the spreading of the eruption may be prevented, and the progress of the disease shortened by the application of a small blister upon the uninflamed skin, at the part to which the eruption seems disposed to extend. (*Plumbe*.) The blister should never be applied upon the vesicles themselves, as this may cause a sloughing of the skin at the seat of the latter, followed by small irritable ulcers, which heal with difficulty, and leave permanent marks upon the skin.

When herpes occur as a concomitant of other diseases, the treatment should be exclusively directed to the removal of the latter, with-

out any attention being paid to the eruption.

The decoction of dulcamara, and, in very severe cases, the arsenite of ammonia dissolved in distilled water, in the dose of the one-twenty-fourth of a grain, have been recommended as peculiarly efficacious.

In some cases of uncommon severity, or where the disease has been improperly treated in its early stages, a rupture of the vesicle takes place, followed by a raged ulcer, which spreads, often, with great rapidity, (*H. exedens.*) These ulcers should be treated by carrot poultices, or touched with a weak solution of nitrate of silver, or chloride of soda.

11.-Lepra.

DARTRE FURFURACEE ARRONDIE-LEUCE-MELAS-LEPRA GRÆCORUM.

A formation of grey or whitish scales, like tale, in the form of circles, or segments of circles, with fissures of a light olive or lake colour, surrounding a circular space, which, in common with the external margin, is usually of a rose red. In the commencement, small reddish papulæ arise, which soon become covered with thin scales. The disease usually commences about the knees, elbows, and eye-brows, and is often influenced by variations of weather, especially upon the approach of rain. In protracted cases, the disease often extends to the matrices of the nails, and causes a curved appearance of the latter.

Lepra, excepting when of a syphilitic origin, is seldom attended with constitutional derangement. (Dendy.) There is a slight itching or tingling at the part, where the disease is seated. The scales, when scratched off, are quickly renewed. In some patients, the disease returns periodically, very often in the spring and autumn, and is often

aggravated by improper diet.

In the early stages of the eruption, the patient should be put upon a mild unirritating diet, composed chiefly of the farinaceous articles and milk, and, at the same time, should be, whenever it is possible, removed to a pure, fresh atmosphere, or enjoy, as much as possible, the external air, in mild, fair weather. Occasional doses of some saline purgative will, in general, be required; and if the disease is extensive, and attended by considerable local inflammation, the application of leeches will be demanded. The tepid bath should be repeated daily, and the parts occupied by the eruption, bathed repeatedly with warm

water, or some simple mucilaginous fluid.

In more protracted cases, the administration of small doses of calomel combined with calcined magnesia and ipecacuanha, should be administered three times a day, and every other morning, a dose of the sulphate of magnesia, and three times a day, a few drops of the solution of arsenite of potassa. In cases of a very severe and obstinate character, the internal use of small doses of sulphuret of potassa—with the sulphur bath, three times a week, has been recommended as peculiarly efficacious. The local application of liquor potassæ, dilute hydrochloric acid, or a lotion of tincture lyttæ and aq. pistillat. have been recommended, in cases in which the scabs are long and firmly adherent: these remedies should be cautiously applied to the parts covered by the scales, carefully avoiding the surrounding skin. When they fail, the application of a blister has been said to change effectually the action of the parts, and to cause a healthy formation of cuticle.

On the disappearance of the disease, change of air and a course of vegetable bitters, or some of the preparations of iron, with the tepid

bath, and a cautious regulation of diet, will in general be proper to restore the healthy condition of the digestive organs and system generally.

12.- Psoriasis.

SCALLY TETTER-DRY SCALL-LEPRA ALPHOIDES.

This form of squamous eruption differs but little from the former; like it, consisting in a rough and scaly condition of the cuticle, sometimes in separate patches, varying in size, and of irregular form, and sometimes occupying continuously a large portion of the surface; for the most part, psoriasis is accompanied with rhagades or fissures of the skin.

Soon after the appearance of reddish points or projections on the skin, small white or pearl-like scales appear, either separate or in clusters, or surrounding a central pink-coloured space, with a slight discolouration of the surrounding skin. In other cases, the patches are of a reddish or brownish colour, interspersed with fissures, and accompanied with intense itching, or a sense of burning, increased by heat or friction; sometimes producing ulceration, and the discharge of a purulent fluid, which, intermixed with the scales, on becoming concrete, forms a more elevated crust. The scales are usually surrounded by a circle of a deep rose-colour, which is increased in intensity, by exertion, or food of a stimulating quality; beneath the scales, the skin is red and irritable. When the patient is in bed, the scales often become detached in great quantities, and, by their friction, aggravate the tingling and itching.

When the disease occurs in the neighbourhood of joints, or parts endowed with considerable motion, blood frequently issues from the

fissures, accompanied by severe pain and smarting.

Psoriasis is occasionally, at its commencement, formed of small distinct patches, with irregular circumferences, (*P. guttata.*) These appear on almost every part of the body, even on the face. In other cases, the patches are of some extent, and also irregularly circumscribed, (*P. diffusa.*) The patches, in other cases, again, present a tortuous or serpentine appearance; (*P. gyrata;*) while, in some instances, the patches, at first separate and irregular, become, in a short time, confluent, until at length the disease covers the greater part of the surface of the body, with a universal scaliness, interspersed with deep furrows, and a harsh, stiff, and thickened state of the epidermis, (*P. inveterata.*)

In infants, the disease very commonly affects the cheeks, chin, forehead, nates, abdomen, &c. When the face is affected, the eyes sometimes partake of the inflammation, and generally the mucous membrane of the nose becomes inflamed and thickened, causing snuffling, difficulty of respiration, and some discharge from the

nostrils.

In protracted cases, there is often great emaciation which rapidly increases, until death takes place. The disease, in early life, is commonly attended with more or less affection of the alimentary canal, which may have been the primary cause of the eruption, or may impede its cure.

Psoriasis generally occurs among the children of the poor, who inhabit unhealthy localities, and is mainly to be attributed to bad food and neglect, in conjunction with the morbific influence of an impure and confined atmosphere, and a neglect of personal and domestic

cleanliness,

In the treatment of psoriasis, a change to a more wholesome atmosphere, an improved diet, proper clothing, and frequent tepid bathing, with a course of treatment adapted to restore to their healthful condition the functions of the digestive organs, are the first steps to be taken, and with frequent ablutions of the more irritable parts, with warm water or mucilaginous fluids, will, in general, be sufficient to accomplish a cure. If there be much irritation, with constant fretfulness, and want of sleep, the parts may be bathed with the watery solution of opium, and the same, with the addition of the carbonate of soda, may be administered internally, should there be nothing to forbid its use. When severe local inflammation exists, leeches around the edges of the squamous patches will be proper.

On the subsidence of the local irritation, the sulphur bath may be employed, and repeated every two or three days, provided it is not found to increase the irritation of the skin. If the latter effect result, it should be at once suspended, and a gentle purgative administered, at such intervals as will be sufficient to preserve the bowels freely open: the following has been recommended, as one well adapted to these

cases:

R.—Sulph. præcip. Jj.
Magnes. calc. Jss.
Pulv. rhæi, gr. xxiv.
Bi-tart. potassæ, gr. xxiv.—M. f. ch. No. xij.

In the chronic stage of psoriasis, the decoction of dulcamara, and small doses, three times a day, of the solution of arsenite of potassa, will be proper; or in cases attended with considerable derangement of the alimentary canal, with unhealthy discharges from the bowels, in which, of course, the arsenical solution would be improper, the decoction of dulcamara may be employed, in conjunction with the spirits of turpentine; three to eight drops or more of the latter, according to the age of the patient, may be given three times a day, dropped on a piece of mint candy.

When the scales do not readily separate, they may be carefully touched with the liquor potassæ, or dilute hydrochloric acid; or the ointment of the nitrate of mercury may be used, taking care to wash off

that already applied, before it is renewed.

If the disease is attended with a state of considerable prostration, and especially if the skin, at the seat of the eruption, acquires a dark

or violet hue, the sulphate of quinia should be administered, or some one of the preparations of iron, or the tincture of iodine, in doses of from two to eight drops, twice or thrice, in the course of the day. A pure, fresh atmosphere, and the daily use of the warm bath, are, in

these cases, all-important.

When psoriasis occurs simply as a concomitant of other diseases, our whole attention should be directed to the removal of the latter; for their disappearance is very generally followed by that of the cutaneous affection. This is a rule which will apply generally to all of the diseases of the skin.

13.—Follicular Tumors.

ACNE—SYCOSIS.

The back of the infant at the breast is often covered with small white elevations:—these are produced by a diseased condition of the sebacious follicles of the skin, in consequence of which they become distended with inspissated sebacious matter. Occasionally, one or more may become inflamed, and produce a small, red, painful tumor, which quickly suppurates, bursts and disappears. Attention to the bowels and food of the child, the warm bath, and warm fomentations, followed, when no cuticular inflammation exists, by gentle friction with the hand or a soft cloth, is the only treatment demanded in these cases.

14 .- Follicular Wart.

Hard, white, and rather shining elevations of the skin, usually occurring on the cheeks and forehead, often stationary for some time, but at others, one or more of them becoming enlarged, and of a pale pink colour, surrounded by an inflamed margin. These tumors ordinarily result from an obstruction of the cuticular follicles, preventing the discharge of their sebacious secretion, which, accumulating in the follicles, and concreting, causes their distension, and, ultimately, excites an inflammation, which often involves for a short distance the neighbouring skin. Soon after inflammation occurs, a suppurative process commences in the follicle, and the sebaceous matter is dislodged; soon after which, all disease disappears; but, in other instances, the matter accumulates within the follicles, and an abscess of considerable size is produced, from a small opening in which, an exudation of cheesy matter, mixed with pus, continues for some time, or concreting upon the surface, forms a crust,

This affection generally occurs towards the close of childhood, in both sexes, but more commonly in boys, and is commonly produced by derangement of the digestive organs; in females, it is frequently connected with that condition of the digestive and assimilating func-

tions, which gives rise, at a later period, to chlorosis.

A proper regulation of the diet, brisk but gentle purgatives, pure air, and the warm or tepid bath, followed by brisk friction of the surface, are the only remedies required; excepting in cases in which the derangement of the bowels is of a more serious and extensive character, when the proper treatment adapted to the particular character of each case will be demanded.

When the tumors are large, few in number, and of an indolent character, they may be seized by a pair of forceps, and excised by a sharp scissors; or the inspissated matter by which they are filled, may be expelled by gentle pressure. When inflammation takes place, suppuration should be promoted by warm fomentations, or a small poultice; and, as soon as matter is formed, it should be allowed early

to escape by a slight incision.

In some cases, towards the period of puberty, these tumors become the seat of chronic inflammation, and the face then becomes studded with hard, dull, red and painful pimples, (A. indurata,) which continue for a long time. They are generally connected with very considerable derangement of the digestive organs; and until these are restored to a healthy condition, very seldom disappear. Various local applications have been recommended for these pimples, but we must confess, we have, in no instance, seen any advantage derived from their use. A course of treatment adapted to the condition of the alimentary canal, with an appropriate diet and regimen, is the only means, which, in our hands, have succeeded in freeing the patient from the deformity consequent upon acne indurata.

15.—Sycosis.

Follicular obstructions occurring upon the hairy scalp. The tumors usually occur in clusters, and are softer and more pointed than those of acne, and surrounded by a faint vermillion blush. They usually suppurate in five or ten days, and form an ulcer, of an irregular, granular, fungoid appearance, somewhat resembling the pulp of a fig, —from whence the name. The ulcers often bleed upon pressure, and become spongy, and attended by an ichorous oozing, of a rancid odour. About the edges, we sometimes perceive a slight furfuraceous incrustation.

The same remarks may be made in reference to the pathology of this affection, as were made in reference to that of acne, from which it differs in nothing, excepting in the part upon which it occurs, and the aggravation of the inflammation by the presence of the hair. The

general treatment is the same in both.

When a single hair is found growing from one of the tumors, it should be extracted, and this generally gives discharge to a small quantity of matter, and the swelling soon disappears. If, upon extracting the hair, no matter flows, its evacuation may be accomplished by gently squeezing the tumor. When several hairs grow from one tumor, it should be opened by the lancet, and a discharge given to its contents;—after this, emollients, and applications tending

to promote suppuration, and allay irritation, are the best. Little benefit, if not actual injury, is to be expected from the numerous sedative washes, and stimulating applications recommended in the treatment of sycosis.

16.—Porrigo.

TINEA FAVOSA—FAVUS—TINEA CAPITIS—SCABIES CAPITIS FAVOSA—TEIGNE
FAVEUSE—HONEY-COMB SCALL—SCALD-HEAD.

This is one of the most obstinate, disgusting and infectious, of the simple cutaneous affections of childhood. There are several varieties of the disease. In one, (P. lupinosa,) an eruption of minute, flat, umbilicated vesicles, of a yellow colour, occurs upon the scalp, attended by more or less itching. The contents of these pustules speedily desicating forms a number of small circular scabs, of a yellow or fawn colour, each scab being hollowed in its centre, and raised at its edges, and having its base deeply enchased in the skin, and strongly adhering to it. The scabs gradually increase in size, but still preserve their circular and cupped form. When the pustules occur in clusters on different parts of the scalp, the edges of the scabs formed by them, approach each other, and, by their aggregation give rise to crusts of considerable extent; in which, however, the cup-like form of the individual scabs, is readily detected, giving to the crusts a resemblance to honey-comb. Sometimes, the cutis is deeply involved in the irritation of the disease, and fissures of considerable extent are formed, from which an ichorous or purulent matter is discharged; and, occasionally, in severe and protracted cases, the cutis, and sub-cuticular cellular membrane are destroyed, and the bone of the skull laid bare. (Alibert.) Between the different clusters of scabs, the skin is covered with furfuraceous scales.

In some individuals the disease extends to the forehead, temples,

and neck; or occurs upon other and remote parts of the body.

The attendant itching is, in some cases, almost intolerable, and causes the patient to scratch himself incessantly and severely. Pediculi, which multiply in great numbers, under the edges of and between the scabs, add farther to this irritation. The smell emitted by the scalp, is peculiar and disgusting, resembling that of the urine of the male cat.

When the crusts are removed by the application of emollient poultices, the epidermis is found to be removed, and the reticular structure beneath, is red and inflamed; a yellow, viscous and fætid discharge, exudes from numerous ulcerations:—a number of small abscesses, are seen dispersed over different parts of the scalp, of a lenticular form, and appearing as so many centres of inflammation. When the disease is neglected and allowed to proceed, it is finally attended by an almost universal falling out of the hair, leaving the skin smooth and shining; the few hairs that remain, being thin, languid, and altered in colour and structure.

When the scabs in this form of porrigo are allowed to become perfectly dry, they assume a white appearance, wear off, break, and detach themselves from the scalp; their remains presenting no regular

form. (Alibert.)

In another, and very common form of the disease, (P. furfurans,) there is, at first, a slight desquamation of the cuticle of the scalp, often attended with considerable itching; there is discharged from the affected surface, an ichorous matter, which dries, and forms scales of scurf; the disease gradually and slowly spreads over the greater part of the scalp; the layers of scurf thicken, and resemble a coating of bran, or coarse flour, the lower surface of which is saturated with fluid. Upon freeing the scalp from this adhesive substance, it is found to be divested of its cuticle, presenting a smooth shining surface, like varnish, and usually of a pink colour. (Plumbe.) The hair, in this form of porrigo, becomes matted and glued together; and, when the finger is pressed upon it, the whole mass yields softly, in every part nearly alike. The disease is chiefly confined to the scalp, but sometimes extends a little beyond its margin, on the forehead, in the form of crusts, resembling a portion of bran, cemented by some adhesive fluid, the edges of which are sometimes dry, and perfectly white. (*Plumbe.*) Much itching attends the disease, and great numbers of pediculi, range freely over the affected parts; -ulcerations to a small extent occur here and there, from which a fluid is discharged. The scalp emits the smell of sour milk.

In other cases, the disease presents itself in the form of numerous small, deeply seated, yellow pustules, of a circular form, and umbilicated, seated upon a circular red patch, which precedes them. The pustules are crowded together, especially around the circumference of the patches; they are commonly each traversed by a hair, and are attended by intense itching; (P. scutulata:)—their contents soon concretes, forming a small cupped scab, which adheres by its edges to those around it, causing a continuous crust, of the form and dimensions of the patch upon which the pustules arose; the individual scabs, in coalescing, losing their cupped form. Around the circumference of the patches, new crops of pustules successively arise, and, scabbing, cause the greater portion of the scalp to become covered with a continuous, thick incrustation, of a whitish colour, around which, portions of the original blotches, in the form of semi-circles, or segments of circles, are perceived. In these cases, there is no hair, except around this incrustation, where the few remaining hairs form a sort of crown. (P. decalvans.) Portions of the scalp are frequently covered with circular patches, varying in size, showing the disease in a more or less advanced stage, with, here and there, a white and shining space, entirely bald;—the intervening portions of skin being covered, to a greater or less extent, with a furfuraceous desquamation. This form of porrigo, may extend to the forehead and neck.

In other cases, the disease is more circumscribed; when the pustules dry, they form small brownish, or dark grey crusts, varying in

form and size, and strongly resembling fragments of old mortar, or the plaster from walls discoloured by damp and dust;—they are often very hard, even of a stony consistency. (P. granulata.) The patches of disease are generally separated from each other, and are not so deeply enchased in the dermoid tissue, as those of the P. lupinosa;—they are sometimes surrounded by thin, dry, furfuraceous scales. The disease is attended with severe itching; and, upon the separation of the crusts, the parts beneath are found to be red and inflamed, smooth, polished, and often swollen. Here and there, small, depressed, whitish abscesses occur, from which issues a small quantity of viscous, colourless fluid, which thickens and dries, forming new crusts, analogous to those preceding. Before the matter becomes perfectly dry, it exhales a nauseous smell, somewhat resembling rancid butter, or milk beginning to turn. (Plumbe.) This form of porrigo is confined to the scalp and parts immediately adjacent.

When porrigo furfurans occurs in children possessed of a less degree of irritability of skin, the disease is of a much more chronic character; there is less disposition to pustulation, or to the exudation of fluid. A constantly repeated exfoliation of the epidermis, in the form of minute, dry scales, takes place, and the cuticular sheath, enveloping each hair for a short distance beyond its exit from the scalp, becomes more clongated, opaque, dry and shining; giving to the hair, near its root, a shining, silvery appearance, resembling the fibres of asbestos. (Teigne amiantacée of Alibert.) When the diseased hairs are cut off with the scissors, the skin appears furrowed, and somewhat red and inflamed. The itching sensation is inconsiderable; and, as the diseased parts are usually destitute of moisture, no unpleasant

smell is emitted. (Alibert.)

In severe or neglected cases, the lymphatic glands at the back of the head and of the neck, sometimes become enlarged; occasionally the tongue has been seen studded with patches and vesicles. (*Dendy*.) When it spreads in the direction of the eyes, porrigo will occasionally produce severe opthalmia. Tinea ciliaris will, in other cases, be produced, with an ædematous state of the puncta lachrymalia, and a discharge of the tears over the cheek; or, even in very protracted cases, ectropium, especially of the lower lid, may finally ensue.

(Dendy.)

Porrigo is capable of being propagated by inoculation or contact; the disease, however, frequently occurs spontaneously, in children of unhealthy constitutions, fed upon coarse, fat food, and in whom no attention is paid to preserve the head, and body generally, perfectly clean. It is under these circumstances, and particularly when the disease, in its early stages, has been neglected, or treated by improper remedies, that the most obstinate and aggravated cases of porrigo occur. The disease is said to be of more common occurrence, in low, marshy, and otherwise unhealthy situations. In the children of those in comfortable circumstances, to whose personal cleanliness daily attention is paid, the disease is generally produced by contagion,

or results from a deranged state of the digestive, assimilating, and nutritive functions, the consequence of excess in the use of rich, fat, or oily food:—in such children, the eruption is generally small in

extent, and without difficulty removed.

In every case, the condition of the patient's general health, and the state, particularly, of the digestive organs, should be first attended to; and whatever indications of derangement or disease exist, should be met by their appropriate remedies; the local treatment being restricted to frequent ablutions of the head with warm water, the hair being previously removed from and around the affected portions of the scalp, by a pair of sharp scissors, and any loose hairs, detached by the forceps. This simple treatment, in recent cases, and where the general health, or that of the assimilating organs, is not extensively impaired, will very often succeed in effecting the complete removal of the cutaneous affection.

The entire rémoval from the scalp of the incrustations produced by the desication of the morbid discharges and the matting of the hair, is all-essential to the entire and speedy eradication of the disease; and, hence, when these have been allowed to accumulate, the head should be repeatedly washed with tepid water, and the diseased parts covered with simple emollient washes. When this, however, does not succeed in softening and detaching the crusts, alkaline washes may be employed, made weaker or stronger, according to the greater or less thickness and firmness of the crusts:—from half a drachm, to one or two, or even three drachms, of the sub-carbonate of potassa, may be employed, according to circumstances. In the removal of the crusts, no violence should be employed. The removal of the dead and loosened hairs, is also a matter of some importance, and should not be neglected; the best plan is to detach them by means of a small

forceps.

After all local irritation has been removed by emollient washes and poultices, we have seldom failed, in slight and recent cases, to cause the speedy removal of the disease, by the application, night and morning, of the unguentum hydrargyri nitratis, or an ointment of the hydriodate of potassa, applied in the same manner:—the parts being well washed with tepid water, in which a small portion of castile soap has been dissolved, previous to the re-application of either ointment. In some recent cases, touching the diseased parts with the nitrate of silver, will often cause an immediate arrest of the disease. The ointment of the ioduret of sulphur, has been recommended as a very efficacious local application; improving the condition of the scalp, preventing the formation of fresh pustules, and causing a healthy growth of hair: (Biett, Schedel:)—but so long as any irritation of the scalp exists, all irritating applications are injurious; emollient poultices, and washes of tepid warmth, are then alone proper, and they should be immediately resorted to, should any degree of local irritation occur, during the employment of any of the ointments or lotions recommended. Care should be taken to prevent the contact of the diseased

discharges from the scalp, with the healthy skin; as, in this manner, the disease may be extended and kept up for a considerable time.

*R.—Hydriodatis potassæ, 3i. Axungiæ, 3ij.—M.

During the treatment, the patient should be put on a diet composed principally of farinaceous substances; he should be afforded the benefit of a pure atmosphere, and have his bowels regulated by the occasional use of mild aperients; while the healthy action of the cutaneous capillaries, is promoted and maintained, by the daily use of the warm or tepid bath, according as the heat of the surface is deficient or increased. In many cases, sulphurous baths, and gentle sulphurous douches every morning, will prove very useful adjuvants.

In chronic cases, a variety of lotions have been recommended; as solutions of the sulphate of copper or of zinc; of the deuto-chloruret of mercury, or of the nitrate of silver, or the sulphuric, nitric or hydrochloric acids, more or less diluted. Quickly washing the diseased portions of the scalp, with diluted nitric or hydrochloric acid, by means of a feather, and then pouring water on the parts, to prevent the action of the acid from penetrating too deeply, has been said to cause the cure of the disease. (Schedel.) By the same authority, touching the diseased parts with a small hair pencil, dipped in creasote, and subsequently applying an ointment of creasote, a is asserted to have succeeded in the eradication of the malady, in cases where many other means had been ineffectually employed.

aR.—Axungiæ, Zij. Creasot. Bij.—M.

We confess, we have seldom met with much trouble in curing cases of porriginous disease of the scalp, excepting in constitutions of a very unhealthy character; particularly in those strongly pre-disposed to scrophulous or tubercular disease. Our success we have mainly attributed to the attention we pay to the complete cleansing of the scalp, by repeated ablutions with warm water, and the occasional use of alkaline lotions; to the early removal of the hair by the scissors, and the removal of loosened and diseased hairs by the forceps; to the constant attention we direct to the condition of the digestive, assimilating and nutritive processes, with the view of detecting and removing, any derangement which may exist in either. This course, with perfect cleanliness of the patient's person and habiliments, free exposure to pure, fresh air, with a well regulated diet, and appropriate exercise, has enabled us, in a very large number of cases, to succeed in the removal of the diseased condition of the scalp, with no further local application, than the emollient washes and poultices above referred to; or one or two days application of the citrine ointment, diluted or undiluted; or of the ointment of the hydriodate of potassa. The disease, however, is not one of very frequent occurrence in Philadelphia.

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17.- Induration of the Skin.

INDURCISSEMENT DU TISSUE CELLULAIRE — ŒDEMA CELLULARIS — SKIN-BOUND.

A peculiar hardness and tension of the skin of the lower extremities, often of the trunk, and occasionally of the face, with coldness, a yellowish or wax-like appearance, or a pale red or purple colour of the affected parts, are often observed in infancy, during the few first

days or weeks after birth.

The disease sometimes commences at the feet, but more generally about the pubic region; and inner surface of the thighs; from whence it gradually extends over a considerable portion, and in some cases, over the whole of the surface of the body. The affected parts become swollen, hard, and incompressible; the skin is tense, and adheres so firmly to the parts beneath, as neither to be pinched up nor moved over them; it is dry, harsh, and decidedly cold to the touch, and, in some cases, presents a yellowish, or waxen appearance; whilst in others, it is of a pale red, purple, or livid hue:—in the latter case, the swelling is the most considerable; whilst the firmness and tension of the parts are the greatest when the skin assumes a pale yellowish colour. The diminution of temperature is always remarkable; and when the disease extends over the greater part of the surface, the body is acted upon by external heat in the same manner as so much dead matter.

The child refuses to suck; its countenance becomes pale and contracted; it is restless; appears unable to make a full inspiration, or cry out, but almost constantly makes a peculiar kind of moaning noise, which has been compared to the cry of young mice. (Dorfmüller.) Deglutition appears, in general, to be attended with difficulty, and is sometimes impossible. The pulse is usually small, rapid, and irregular; and there is always more or less disorder of the alimentary canal, with frequent discharges of a bright green, or whitish, or clay-coloured appearance. There is generally a deficient secretion of urine; though to a greater extent in some cases than in others.

Respiration becomes gradually more and more difficult, until death ensues; usually before the fourth day, but sometimes not until a much later period. In some cases, tetanic spasms supervene, towards the close of the disease; the head and trunk being sometimes bent rigidly

backwards, and the jaws becoming firmly locked.

The disease is unattended, throughout, with any degree of febrile reaction; though occasionally some degree of feverish excitement precedes its occurrence. (Andrew.) Occasionally it is attended with a jaundiced condition of the entire surface. (Breschet, Billard.)

It is an affection which is always of a dangerous character; generally terminating fatally, within one, two, or at farthest, three weeks. In slight cases, in which the morbid condition of the integuments is of limited extent, sometimes, in a few days, the respiration of the infant

improves, the parts affected increase in temperature, and become

softer, and by slow degrees an entire recovery takes place.

On the examination of the bodies of infants who have died of induration of the skin, the sub-cutaneous cellular tissue is usually found to be thickened, condensed, and loaded with scrum. It is often of a reddish or granular appearance, not unlike a portion of hepatized lung. In many cases the adipose substance is firm, hard, and indurated; with or without infiltration of the cellular tissue. (Dugès, Denis, Billard.) The whole of the tissues are engorged with venous blood, with which every organ is unusually loaded. (Billard, Wolff.)

The most frequent lesion of the viscera is inflammation of the alimentary eanal, with more or less morbid change of the liver. (Bil-

lard.)

The lymphatic glands are frequently found indurated and enlarged; more especially those of the mesentery. In general, the serous infiltration is not confined to the sub-cutaneous cellular tissue; it has been observed in the sub-peritoneal tissue, in the eavity of the mediastinum, and in the plexus choroides: (Billard:)—we have met with it in the intralobular structure of the lungs, at the base of the brain, and along the whole of the spinal marrow. When free incisions are made through the skin, the serum gradually flows out, and the swelling and hardness of the diseased parts disappear, excepting in those cases in which there co-exists with the serous infiltration, a hardening of the

adipose tissue. (Andry, Billard.)

Induration of the skin usually occurs soon after birth; occasionally it is congenital. It is more frequent in winter than in summer. It prevails to the greatest extent in hospitals appropriated to the reception of children, and among the offspring of the impoverished classes of society, who inhabit unhealthy localities, and small, ill-ventilated, and filthy habitations. It has been observed that infants reared by the hand are more liable to the disease, under all circumstances, than those who are nourished at the breast. (Caspar, Billard, Wolff.) Although the disease may attack infants, apparently in perfect health, yet, in the great majority of instances, the children who become the subjects of it, are observed to be feeble or languid from birth; or to labour under more or less disorder of the alimentary eanal, previously to the occurrence of the cutaneous affection; we should hence be inclined to refer the disease to gastro-intestinal disease, and a generally languid and debilitated condition of the organism, the result of contaminated air, and improper or unwholesome diet; and probably, in some instances, an additional morbific cause, a cold and humid atmosphere, may coneur in its production. (Andry, Auvity.) The connection of the disease with gastro-intestinal irritation, had already been noticed; (Denis;) and it is further shewn by the fact of the frequency with which, in post-mortem examinations, inflammation of the mucous membrane of the digestive organs, is detected.

The eauses of the disease appear to differ but little from those

which give rise to infantile erysipelas, to which it has a very close resemblance. It is often attended with a condition of the skin not very dissimilar from that which occurs in erysipelas; while the latter is frequently associated with considerable induration of the surface, for some distance beyond the inflamed margin. (*Broussais*,

Denis.)

The morbid condition of the surface is evidently dependent upon the simple infiltration of the cellular membrane with a serous fluid; (Baron;) this is proved by the appearance of the sub-cutaneous tissue after death, as well as by the fact, that when, during the lifetime of the patient, incisions are made into the indurated parts, and pressure is applied, the serum is discharged, and the swelling, tension, and hardness, entirely disappear; (Andry, Auvity, Wolff;) it would appear, therefore, that the disease is, in fact, a genuine ædema; the extreme hardness of the skin resulting from the less loose and yielding nature of its tissues in early infancy. (Billard.) The ædema has been referred to a languid circulation, the result of a venous plethora and the action of such external agents as have the effect of suspending the cutaneous transpiration, and thus favouring the accumulation of serosity, in the sub-cutaneous cellular tissue. (Billard.)

When the ædema is general, and the venous congestion exists to a very great degree, all the organs abundantly supplied with cellular tissue, have their functions more or less disturbed, in consequence of the infiltration of serum. Thus, the glottis becoming ædematous, while the lungs are over-loaded with venous blood, the cry of the infant is rendered painful; acute, and smothered. The coldness of the surface is the result of the languid state of the capillary circulation, the deficient oxygenation of the blood in the lungs, and the gen-

eral debility of the patient. (Billard.)

All this is no doubt true, so far as it regards a certain class of cases; in others, however, which have fallen under our notice, the venous congestion, and consequent serous infiltration of the sub-cutaneous cellular tissue, were evidently the result of an imperfect distension of the lungs at birth, and the consequent production of the condition denominated atelectasis by Jörg. The probability of this as a frequent cause of the disease was suggested by Dr. Maunsell; its certain occurrence in several cases, we have established by the result of our autopsies.

We believe that there is still another class of cases by no means unfrequent, in which the serous effusion into the sub-cutaneous cellular tissue, is the result of a sub-acute inflammation of the latter, consecutive, most frequently, to irritation of the alimentary canal. (Denis.)

It would appear that there are two distinct varieties of induration of the skin. That from serous infiltration of the cellular tissue, and another from induration or concretion of the adipous matter. (Dugès, Denis, Rostan, Billard.) The latter may exist, with or without general infiltration of the sub-cutaneous cellular tissue; it is usually seated in the cheeks, nates, calves of the legs, or back, and occurs

with or without derangement of the circulation or respiration, and is seldom attended with symptoms of a nervous character. (Billard, Rostan, Wolff.) When the adipous tissue is alone diseased, the affected parts are but little swollen, and have the firm feel, and yellowish white appearance of wax, or concrete suet; in the latter stages of the disease, they are said to be sonorous upon percussion, and are perfectly cold to the touch. In these cases, upon dissection, the subcutaneous adipose substance is found hardened and condensed like suet, with the skin contracted, and firmly adherent to it.

In this country, induration is an extremely rare disease; although connected, as physician, for eighteen years, with one of the largest medical charities, perhaps, in this country, we met with but twelve cases of the disease during that period. In the hospitals for children, in Europe, it is, however, of more common occurrence. In the Foundling Hospital of Paris, 645 cases occurred between the years 1808, and 1811, of which number, 567 terminated fatally; and in 1826, there occurred in the same institution 240 cases, of which 50

died. (Billard, Caspar.)

The disease is described by the generality of the writers on the subject, as being but little under the control of medical treatment, and as terminating fatally in the majority of cases: the condition of the skin, however, appears to be of less importance than that of the system generally; and death more seldom results from the morbid state of the integuments, than from the serious diseases of the internal organs—the alimentary canal, the lungs, and the brain—with which it is commonly associated. (Billard.)

When limited in extent, and occurring in infants possessed of some vigour of constitution, or even when general, but not of an aggravated character, and uncomplicated with severe visceral disease, it will

often yield to very simple remedies. (Wolff, Cisparini.)

The proper treatment of induration of the skin in infants, will depend pretty much upon the particular character of each case. In some, there is no doubt that the general plethora or local accumulations of blood, will demand the employment of leeches, cups, or even general blood-letting, and gentle purgatives; (Palletta, Billard, Cisparini;) and that a cautious use of these remedies will be attended with the best effects. Friction of the surface with the hand, or warm flannel, with the use of flannel garments next the skin, (Baron, Billard, Cisparini, Maunsell,) are all important remedies, in the generality of cases, and should not be neglected. Blisters have been strongly recommended; (Richter;) when early applied to the affected parts, they would appear to remove the sanguineous engorgement of the sub-cutaneous tissues, promote the absorption of the effused serum, and prevent its undue accumulation. (Eberle.) We have, in several instances, seen good effects result from a well-timed blister:—it should be kept on about three hours, and when removed, the part being then covered with a large emollient poultice.

The exhibition of an emetic of ipecacuanha, for the purpose of

relieving the air passages from accumulations of mucus, and unloading the vessels of the lungs, has been recommended; (Maunsell;) and we have no doubt that it will prove, in most eases, highly beneficial.

The vapour bath has been considered, by some practitioners, one of the most effectual remedies that can be employed in this disease; and when it is dependent upon sub-acute inflammation of the subcutaneous tissues, or gastro-intestinal irritation, will no doubt prove advantageous; but it is not a remedy adapted to the generality of cases; in many, dry heat, and frictions to the surface, will have a far better effect. (Baron.) In some cases, the respiration, during the continuance of the patient in the bath, is painfully accelerated, and congestion and effusion in the lungs or brain, have occasionally followed its use. (Billard.)

Incisions through the skin, at the seat of the disease, have been suggested as a means of relieving the over-loaded state of the subcutaneous vessels, and of giving exit to the serum distending the areola of the sub-cutaneous cellular tissue. (Andry, Wolff.) We are not aware that this procedure has been practised to any great extent; nor are we acquainted with the results of the eases in which it has

been tried:—we can see no valid objection to it.

In cases attended with derangement of the alimentary eanal, small doses of ealomel in combination with ipecaeuanha, three or four times a-day, with the oceasional interposition of a dose of castor oil and turpentine, as recommended in infantile crysipelas, should be administered. If, however, the symptoms indicate that the gastro-intestinal mucous membrane is the seat of acute or sub-acute inflammation, a few leeches should be applied to the epigastrium, or wherever the tenderness is most decided, and followed by large emollient cataplasms.

Where there exists very great debility, wine whey, or even ammonia in combination with the aqua camphorata, with frictions to the surface with eamphorated spirits, or the oil of amber, followed by the application of a flannel envelope, will be the most

appropriate treatment.

18.—Jaundice—Icterus Infantalis.

In infants, two or three days after birth, it is not unusual for the whole surface of the body, as well as the tunica conjunctiva, to acquire a yellow hue, more or less intense, which, in the course of a few days, in general, gradually disappears. (Icterus neonatorum.) Generally speaking, this is an affection of very little importance, appearing to depend upon a temporary excess of the colouring matter of the bile in the serum of the blood, and to be unattended with disease of the liver, or any of the other organs. In some cases, it has appeared to us, to be connected with the want of a free evacuation of the meconium. Occasionally, this discoloration of the skin we have known to be accompanied with a good deal of drowsiness, and an evident sense of uneasiness in the skin. Nothing more is

required in any case, than a dose of castor oil, or a grain or two of calomel, and the same quantity of rhubarb, with the daily use of the warm bath.

In some instances, the skin of the infant will be marked by dull yellow, irregular blotches, (maculæ hepaticæ,) more or less extensive, and sometimes occupying the greater part of the surface. The colour of these blotches varies very much in intensity; and in cases where there exists considerable derangement of the alimentary canal, they occasionally assume a very dark hue; (melasma;)—in some instances, they are accompanied with a prickling or tingling sensation.

The disease appears to be most generally connected with derangement of the digestive organs,—the colour of the skin being dependent upon a morbid secretion from the cutaneous vessels:—it has little or no affinity with jaundice. Considerable debility and langour, and indications of a disordered state of the alimentary canal generally,

precede its occurrence.

Its removal is to be effected by such means as are calculated to restore the regular and healthy functions of the digestive organs, and to improve the health of the infant generally; in all cases, the breastmilk of a healthy nurse, a pure, fresh air, and the daily use of the warm bath, with gentle friction of the surface, are important parts of the treatment.

Genuine jaundice, with intense yellowness of the skin and tunica conjunctiva, nausea or vomiting, costiveness—the evacuations, when procured, being white or clay coloured—and a deep yellow colour of the urine may occur in infants, from congenital obstruction or malformation of the biliary ducts. Under such circumstances, the disease is

incurable, and sooner or later will prove fatal.

The same symptoms, with the addition of pain and tenderness of the epigastrium, vomiting of the food soon after it is swallowed, or, if retained, violent paroxysms of pain, occurring an hour or two after it is taken, may be produced in young children, by inflammation, acute or sub-acute, of the mucous membrane of the duodenum. Here the treatment must be directed entirely to the removal of the latter disease:—mild mucilaginous fluids, in small quantities, a few leeches to the epigastrium, followed by warm fomentations, or an emollient cataplasm; and, after the inflammation has been, in this manner, reduced, a blister to the epigastrium, for a couple or three hours, succeeded by a soft bread-and-milk poultice, and internally, very minute doses of calomel and ipecacuanha, three or four times a day.

In many cases, however,—we have certainly met with a great number,—the jaundice of children is dependent upon a state of hyperæmia, or of sub-acute inflammation of the liver. In these cases, the colour of the skin and eye is of a dirty yellow—the surface is harsh and dry; the urine is charged with bilious matter; the stools are dry and clay-coloured; the countenance has an anxious, distressed expression, and the child is apt to fall into a languid, drowsy state; there is considerable acidity of stomach, flatulency, and frequent griping or colicy

pains; and with these symptoms, there is always more or less fulness of the right hypochondriac region, with great tenderness upon pressure. The disease, in general, assumes a chronic character, and is attended with considerable and progressive emaciation, tumefaction, and hardness of the abdomen; frequently with ædema of the lower extremities, and sometimes effusion within the peritoneal cavity. The tongue, which was at first coated with a thin layer of yellowish mucus, becomes, in the progress of the disease, dry, and of a darkbrown colour. It is occasionally accompanied by induration of the sub-cutaneous cellular texture, and more frequently, with purpura, either simple or hæmorrhagic.

The disease is, in general, produced by the same causes which give rise, in infancy, to derangement of the digestive organs. When depending upon hyperæmia of the liver, it is usually connected with the indications of a general plethoric condition of the system, and a very languid circulation. It has been supposed, that this condition is most apt to occur in infants who, when born, present a turgid and livid appearance of the face and body, and an oppressed state of the brain, and which has not been sufficiently relieved by a flow of blood

from the divided vessels of the cord. (Eberle.)

In the treatment of the jaundice of infants, our remedies will depend upon the character of the symptoms in each case. When simple hyperæmia of the liver exists, an emetic of ipecacuanha should be given, and repeated, in a day or two, if circumstances require it; the emetic should be followed by the warm bath, and gentle friction over the whole surface of the abdomen, and a grain or two of calomel, followed by castor oil, or magnesia and rhubarb. The bowels should be kept regularly open, by divided doses of calomel, magnesia, and ipecacuanha, given three times a day, with an occasional dose of castor oil, the activity of which may be increased by a few drops of turpentine. The warm bath should be repeated daily, and the

child allowed the benefit of a free, pure atmosphere.

When the case is marked by symptoms indicative of hepatic inflammation, a few leeches should be applied to the right hypochondrium, and followed by an emollient cataplasm. The leeches may be repeated, after a short interval, if the fulness and tenderness of the right hypochondrium continue with little abatement. Calomel should be administered in the same manner as directed above. After the hepatic inflammation has been somewhat reduced, the warm bath, followed by a blister over the liver, will, in general, be found of decided advantage; it should be removed in three hours, and the part to which it had been applied, covered with a soft emollient poultice. When the calomel produces irritation of the intestines, we may combine it with small doses of the extract of hyosciamus, which in no degree interferes with its action upon the bowels. The use of the calomel, with an occasional purgative of castor oil and turpentine, should be continued, until natural, bilious stools are procured, when it should be suspended, and the freedom of the bowels maintained by the use of the citrate of magnesia and thubarb, or castor oil.

*R.—Calomel, gr. iij.
Ipecac. pulv. gr. ij.
Magnes. calc. gr. xxxvj.
Ext. hyosciami, gr. iv.—M. f. ch. No. xij.

In the chronic form of infantile jaundice, the warm bath, followed by frictions, blisters to the right hypochondrium, and a cautious use of calomel and ipecacuanha, in alterative doses, are the remedies from which most benefit is to be anticipated. The carbonate of soda may, in many cases, be administered with advantage; a grain or two should be given every two or three hours, dissolved in a teaspoonful of carbonated water, or in the same quantity of a weak infusion of hops; or, it may be given in combination with taraxacum. We have seen very striking advantage result, in chronic cases of jaundice occurring in infants, from the taraxacum, in combination with the vegetable alkalies; whilst again, we have given it in tolerably large doses, and continued its use for some time, without any benefit whatever. When, in the chronic form of infantile jaundice, there is considerable flatulence of the intestines, with frequent griping or colicy pains, the turpentine has, in our hands, succeeded the best, in removing the tendency to the formation of gas, and relieving the suffering of the patient: we have generally, at the same time that we administered the turpentine—in the dose of from five to ten drops, according to the age of the patient, every three hours—directed a dose of extract of hyosciamus, in combination with ipecacuanha and carbonate of soda, three times a day, and a campliorated mercurial plaster over the whole of the right hypochondrium.

aR.—Taraxaci, Jij.
Bi-carb. sodæ, gr. xxiv—xxx.
Aquæ, Jij.
Syrup. limon. Jij.—M.
Dose, a teaspoonful every four hours.

bR.—Extr. hyosciami, gr. iv.—vj.
Pulv. ipceac. gr. ij.—iij.
Bi-carb. sodæ, gr. xxiv.—xxxvj.
—M. f. pill. No. xij.

When we have succeeded in procuring natural, bilious discharges from the bowels, and the skin begins to assume its natural hue, the restoration of the patient's strength may be promoted by some light tonic; either the cold infusion of bark, or the sulphate of quinia, or the protocarbonate or tincture of the sesquichloride of iron, with a light, vegetable diet, the warm bath daily, gentle exercise in the open air, and occasional doses of some mild purgative, to keep the bowels regular, if they are inclined to costiveness.

ERUPTIONS CONNECTED WITH LANGUID CUTANEOUS ACTION.

19.—Pityriasis.

DANDRIFF.

Exfoliations of the cuticle in different parts of the body, but in

infants, chiefly occurring on the hairy scalp, unaccompanied by much

irritation, or fluid secretion.

We are to recollect that in all infants, for some days after birth, a slight exfoliation of the cuticle takes place; which is always to be considered a healthy natural process. Dandriff, however, is the progressive desquamation of thin scales from the scalp, succeeding light, pink, unclevated patches; attended, in most cases, by a trifling degree of chronic inflammation of the vessels secreting the cuticle, but without the discharge of fluid. If the infant in whom this affection occurs, is not very much neglected in regard to cleanliness, it usually disappears in a few weeks; but now and then, under different circumstances, and particularly, when, at the same time, there is derangement of the alimentary canal, from improper or unwholesome food, it is followed by considerable irritation of the scalp, a fluid secretion, and scabbing, (P. scabida,) or a state resembling the porrigo furfurans. Under circumstances of peculiar aggravation, indeed, there is no real difference between the two affections. (Plumbe.) In these severe cases, there is often falling off of the hair, and the eye-lids, likewise, occasionally become diseased.

On the breasts of children, about the tenth year, are often seen a few light, yellowish scales, scattered here and there, and sometimes so indistinct as scarcely to be perceived, (P. versicolor.) In this situation, they sometimes resemble freckles, or light yellow stains; upon more minute examination, however, their squamous character will be readily detected. In children of unhealthy constitutions, the spots will occasionally assume a dark or livid hue, (P. nigra, melasma;) this will often be observed in children, more especially, who have become debilitated by a residence in warm or tropical

climates.

When the dandriff occurs upon the scalp of infants, it is, no doubt, in very many instances, dependent on the disposition to determination to the head, so common at this age; and, it is not improbable, when attended by much irritation and fluid secretion, hyperæmia of the cerebral vessels may be prevented by it. (*Plumbe*.) The condition of the patient's health, therefore, requires to be closely considered, in deciding upon its treatment. Sedative applications are seldom advisable, or even safe; and those of an irritating character should never be employed.

Upon whatever part of the body the disease may present itself, it will demand little attention beyond what may be necessary to restore the patient's general health, and the regular action of the digestive functions; with strict attention to cleanliness of the surface generally. The exfoliation will generally be quickly checked, by simply washing with warm water. In more obstinate cases, a

weak alkaline solution may be gently rubbed upon the part.2

R.—Liq. potassæ, 3j. Aquæ Rosæ, 3iv.—M.

20.—Ichthyosis.

FISH-SKIN DISEASE.

A morbid thickening, with a dry and hard condition of the cuticle, evidently dependent upon chronic inflammation of the vessels by which the cuticle is produced; unattended, at first, by any uneasy sensations, but, as the thickening of the cuticle increases, a sensation of increased heat, is experienced, and redness, and other marks of some degree of irritation are observed, on the healthy skin, around the margin of the diseased part. As the thickening of the cuticle causes it to rise above the surrounding surface, it begins to exhibit the appearance of minute and innumerable fissures, which soon increase in length, and extensive cracks, intersecting each other, form, dividing the surface into innumerable fragments, each, when considered separately, exhibiting a great similarity in structure, to the common wart. The diseased cuticle now assumes a dusky, dark brown colour, which This discolouration results from gradually approaches to blackness. the entanglement of dirt by the rough and fissured surface of the skin, which even frequent ablutions will not prevent. On drawing the finger over the diseased surface, the sensation is the same as though the part was covered with large warts of long standing. (*Plumbe.*)

The arms and legs are the most common situations of this disease;

it very rarely occurs upon the face.

The skin of those infants in whom the disease is subsequently developed, instead of the usual smooth and soft texture, has a sallow, dry, shagreen-like appearance. (Rayer.) The cuticle, during the first or second month, becomes more rough, and of a greyish hue, communicating to the touch a feeling like that produced in many cases by the skin of the aged. This condition may continue throughout life, or it may increase with the progress of years.

The appearance of the skin in cases of ichthyosis is more like that of the legs of fowls, than the scales of fishes, or of serpents; and, when the thickening of the epidermis is very considerable, it has been likened to the bark of certain trees. (Rayer.) It may become, in some cases, so rough, that the hand, when passed over it, experiences a sensation similar to what is felt when a file or shagreen, or the skin

of certain fishes, is handled.

The squamæ formed by the diseased cuticle, may, with the exception of the largest, be detached without causing pain, or any unpleasant sensation. When they are detached by friction, or in any other manner, they are speedily re-produced, with the same characters as before. (Rayer.)

Desquamation of the diseased cuticle often takes place during the summer season; but the disease again constantly recurs, on the return of autumn. On the separation of the squamæ, the skin is found to retain its natural colour; its furrows, however, are more marked than

natural, and its exhalations and secretions are found to be entirely

suspended.

The disease is often congenital; and is then seldom got rid of during life. Its remote and exciting causes, are equally involved in obscurity. In numerous cases where it has been studied with the utmost care, it was found impossible to trace it to any pre-existing derangement of health, or local irritation. It is frequently hereditary; (Girdlestone, Martin, Rayer;) but as frequently occurs in children whose parents, and grandparents, have presented no traces of the disease. Neither climate, nor season, nor locality, nor mode of life, would seem to exercise any marked influence upon its production.

When local, of small extent, and occurring subsequent to birth, in the children of healthy parents, there is some hopes of effecting a cure. Repeated blisters and topical stimulants, have succeeded in removing the disease in some cases; in two instances in which it was limited to the legs, a cure was effected by strapping the affected parts tightly with adhesive plaster, and applying a long roller, kept constantly moistened with cold water. The straps being renewed every

fourth or fifth day. (Plumbe.)

When the disease is of greater extent, we must content ourselves with the frequent use of emollient washes, mucilaginous and soothing fomentations, the warm bath, frequently repeated, the vapour bath, and the occasional use of alkaline baths. Internal remedies have not

been found to produce any good effect.

In a practice of twenty-six years, we have met with but two cases of well marked ichthyosis; in one, the disease was hereditary, and resisted every means employed; in the other, it was of small extent; the parts affected were daily washed with diluted nitric acid, by which the squamæ were rendered much thinner; a succession of blisters was then resorted to, and in ten weeks from the commencement of the treatment, a complete cure was effected. Eighteen years have now elapsed without any indication of the disease returning.

21.-Alopecia.

BALDNESS.

Children are often affected with partial baldness, on one or more parts of the head; the hair is observed to fall entirely out, in patches of greater or less extent; the bald places being closely surrounded by a margin of hair, of luxuriant and healthy growth; more generally, the hairs in the immediate vicinity, are of a conical shape, and sometimes bifurcated, at others extremely brittle. These patches have been known gradually to extend in size, and even, finally, to produce complete baldness of the entire scalp.

The disease would appear to result from a deficient action of the

glands by which the hair is secreted. In infants, the denuded parts often become covered with a thin, light-coloured, downy substance, which would appear to result from an ineffectual effort at the production of hair. We speak, of course, of cases of simple alopecia, uncon-

nected with disease of the integuments of the scull.

The treatment will consist simply in occasionally shaving the hair, and the application to the scalp of some gently stimulating wash; water, as warm as it can be borne, without producing pain or uneasiness, is perhaps one of the best. Gentle friction with a soft brush or flannel will also be proper. In some cases, a lotion composed of equal parts of brandy and camphorated spirits, has been found useful. Of the more severe stimulating applications that have been recommended, we have no experience, and should be opposed to their use. The first growth of hair upon the denuded patches, will always be of a very fine and silky texture; but, subsequently, it becomes firmer and more luxuriant. It is said that washing the young hair daily with a strong infusion of rosemary, will have the effect of increasing its growth, and improving its texture. (Dendy.)

It is almost needless to remark, that attention must be paid to the general health of the system. Children in whom partial or general baldness is most liable to occur, are generally of debilitated habits; the vital functions are performed languidly, and, in particular, the cuticular circulation will be found more or less deficient in activity. To remedy this state of things, it is important that a proper course of treatment be instituted. The warm bath, gentle friction of the surface, light tonics, a proper diet, and daily exercise in the open air, will be proper in all cases; and, when disorder of the digestive organs exists, small doses of calomel, in combination with calcined magnesia, ipecacuhana, and extract of hyosciamus, with the interposition of daily

doses of castor oil and turpentine," will be demanded.

*R.—Ol. ricini, Ij.
Spir. Terebenth, M x.—M.
For a dose.

22.—Ecthyma.—Rupia.

ATONIC ULCER.

Ecthyma is an eruption of hard, red elevations, painful upon pressure, and with inflamed bases; the elevations, in a few days, increase irregularly in size, and pus is formed at their apex. The eruption is occasionally attended by a violent smarting pain. The pustules occur in irregular groups of various dimensions, and suppuration proceeds with greater or less rapidity, in different cases. In some we have a large inflamed base, with a small pustule in the centre; in others, the pustules are in the form of blebs, with a central spot. In three or four days, the matter of the pustules becomes dry, and forms thick, brown scabs, which fall off in the course of a week or ten days, leaving a

dark red stain, or superficial cicatrix; in infants, the elevations slowly disappear, without suppuration, by cuticular desquamation.

When ectlyma is confined to a particular part of the surface, the eruption may come out at once; but in other cases, there is generally a succession of pustules. The duration of the disease, in the first case, is from one to two weeks, but in the latter, it may continue for months. It occurs most frequently upon the extremities, shoulders, and nates.

Several varieties of the disease are described by Willan and others, as the *E. vulgare*, the *E. infantale*, the *E. luridum*, and the *E. cachecticum*; but as these varieties are the mere results of different degrees of constitutional debility, or of irritability of the skin, it is unnecess-

sary to describe their individual characteristics.

Rupia is the eruption of one or more flattened blebs, of the size of a shilling, containing a serous, transparent fluid; the bleb soon becomes flaccid, its contents increases in consistence, and becomes turbid, and finally drying, forms scabs of a dark brown colour, rough on the surface, thick and prominent in the centre, and adhering, at their edges, to the surrounding cuticle, which is there slightly elevated. (R. simplex.) On the separation of the scab, a superficial ulceration of the skin remains, which usually heals rapidly, though it may remain, for a time, open, sometimes covered with a scab, and sometimes with-The ulcer generally leaves behind it a deep red stain. In some cases, the blebs are much larger, and are surrounded by an inflamed margin, several lines wide. The blebs are very quickly converted into rough scabs of a very dark colour, which are also surrounded by an inflamed areola; from this the cuticle is raised by successive formations of matter and bloody serum, which, upon drying, add to the size and thickness of the scab, with the increase of which the arcola advances, and by continually forming new rings of matter, increases the primitive scab in width and thickness, until it acquires the size, and almost the shape and appearance of the outer surface of a small limpet, or oyster shell. (Bateman.) (R. prominens.) The scabs in this variety, which is usually confined to the lower extremities, often adhere for a long time; when they separate, they leave an ulcerated surface, which has often a bad appearance. Sometimes the scabs are reproduced; in other cases, the ulcer remains open, extending constantly in depth, and is with difficulty healed; and when cicatrized, leaves dark coloured, livid marks upon the skin, which disappear very slowly, if at all.

In other cases, the disease commences with slightly raised patches of a dark livid colour, upon which flattened, irregular-shaped blebs soon form, surrounded by a dusky red margin. The fluid contained in the blebs is thick and dark coloured, which, in place of drying, escapes by the bursting of the blebs, and an excoriation of the skin remains, attended with pain, and soon degenerates into an ill-conditioned ulcer, which spreads rapidly in extent and depth. (R. escharotica.) Successive blebs arise and burst, and in this manner multiply

the points of unhealthy ulceration. Cicatrization is always slow and protracted. This variety generally occurs on the loins, thighs, and lower extremities.

Ecthyma and rupia occur only in children who have been subjected to causes, the operation of which have a tendency to reduce the energies of their system, and to produce a languid state of the vitality of the skin; hence impure and confined air, a cold and damp atmosphere, and deficient or impure food on the one hand, or a state of debility, from preceding diseases, on the other, are their usual predisposing and exciting causes. Both forms of disease are very apt to occur after measles, scarlatina, small-pox, and other severe affections of childhood; and in nearly every case of any severity, they are accompanied by a low, irritative fever, which frequently assumes the hectic character, by a general wasting of the body, and the utmost

languor and debility.

In the treatment of these affections, our object should be chiefly directed to the restoration of the general health and vigour of the patient's system; and when this can be effected, the local disease will seldom demand much attention, it being very generally arrested, the scabs separating, and the ulcerations assuming a healthy aspect, and rapidly cicatrizing. The means by which this great object is to be obtained, will, in some measure, be governed by the circumstances of individual cases; as a general rule, they will consist in pure, fresh air, cleanliness of person, appropriate clothing, a wholesome, nourishing diet, meat gravy or jellies, chicken, beef, or mutton broth; and when the exhaustion of the patient is extreme, wine whey, or wine and water. The cold infusion of bark, the sulphate of quinia, and other vegetable tonics, may, in some cases, be employed with advantage; they are best adapted to the more severe and protracted forms of these diseases.

In the early stages of most cases, gentle purgatives, occasional doses of a mercurial alterative, and the warm bath daily, will generally be required; in more protracted cases, if the discharges from the bowels are of a vitiated character, the spirits of turpentine will often be found to produce a beneficial effect; in such cases, we must be cautious in the administration of mercury in any form; good air, wholesome food, and the sea air and sea bathing, with, perhaps, some light tonic, will generally succeed, unless the health of the patient is completely impaired, in effecting a cure; a cautious use of weak alkaline baths has, in numerous instances, been found of benefit.

*R.—Mass. f. pill. hyd. gr. iv. ad xij. Or Ipccacuanhæ, gr. ij.—iij.
Ext. hyosciami, gr. ij.—vj.
Carb. sodæ, Эj.—Jss.—M. f. pill,
No. xij.
One to be given for a dosc, every evening.

Or, R.—Calomel, gr. vj.

Magnesiæ calc. gr. xxiv.
Ipecac. pulv. gr. iij.

Ext. hyosciami, gr. iij.—M. f.
chart. No. xij.
To be given as above.

In regard to the local treatment, so long as the pustules or ulcerations present a decidedly irritable condition, emollient washes and

applications are alone to be employed. When the ulcers are tardy in cicatrizing, a lotion of red wine and water, or of red wine and honey, may be employed. In the ulcerations of rupia, when of an indolent character, a wash of the bi-tartrite of potassa, or dusting their surface with this substance in a dry state, has been said to answer very well. (Willan.) If these do not succeed, they may be washed with a solution of nitrate of silver, or of sulphate of copper. If much itching or pain is present, an ointment of hydrocyanic acid and sugar of lead has been recommended.4 The ointment of the nitrate of mercury has, in our hands, very generally proved successful. Washing the ulcers with diluted nitric or hydrochloric acid, will often be a means of improving their condition, and promoting cicatrization; the degree of dilution necessary will depend upon the more or less indolent and unhealthy condition of the ulceration. Ointments of the proto-ioduret, or of the deuto-ioduret of mercury have been used, with great success, in obstinate cases. (Biett.) In the more malignant ulcerations, the chlorides of lime and soda, as an external application, and the latter internally, may be tried. But we are to recollect, that in no case, but especially in those in which the disease is of an extensive and aggravated character, will external applications be of much avail, unless the condition of the general health of the patient be, at the same time, improved by a proper diet and regimen, and the cautious employment of invigorating remedies; in many cases, when this can be effected, the local disease very readily disappears, with very simple applications. When we fail to restore the vigour of the system, the most active topical applications will be unproductive of good.

*R —Acid. hydrocyanic. 3j.
Plumbi acetut. gr. xv.
Ungt. cetacei, 3ij.—M.

23.—Pemphygus.

POMPHOLYX .- BULLE FEBRILIS .- PEMPHIGOID FEVER.

The eruption of large bullæ, preceded and accompanied by febrile phenomena, which generally assume a typhoid character; the disease, in its progress, having many features in common with the gangren-

ous form of infantile erysipelas.

The eruption is usually preceded, for several days, by a sense of chilliness or shivering, followed by pain in the head, and epigastrium, increased heat of the surface, and a frequent, feeble, irritable pulse, with great languor and fretfulness; a dull erythematous blush, or patches, sometimes of a livid hue, and slightly elevated above the surrounding parts soon appear; these occur on various parts of the body, but chiefly on the neck, upper part of the breast, inner surface of the thighs, and the groins; a very common situation for them is behind the ears. (Stokes.) Large, irregular vesications quickly make their

appearance; they are generally flattened on the top, and at first filled with a transparent fluid, which, as the vesicles enlarge rapidly in size, becomes turbid, and of a purplish hue. The vesicles are usually surrounded by an inflamed border, of a livid red colour. The fever now assumes a typhoid character, with dry, brownish tongue, and a rapid sinking of the pulse. When the vesications break, and discharge their contents, an ulcerated surface is left, which is extremely painful, and spreads over the surrounding surface, often with great rapidity. The discharge is often fætid, and large in quantity, and the edges of the ulceration acquire a livid hue. When situated behind the ears, the connection of the posterior cartilage with the cranium, is often destroyed, the ulceration extending to the meatus auditorious, to the eyes, the sight of which becomes destroyed, and even to the vertex. (Stokes.) When the disease occurs upon the hands, exfoliation of the bones of the fingers sometimes takes place. (Dendy.) In other cases, vesications arise in rapid succession, on different parts of the body, followed by gangrenous ulcerations, and the patient sinks, in a few days, from the pain, loss of sleep, and intense fever. (Willan.) Death generally takes place about the tenth or twelfth day, and is often preceded by convulsions. (Stokes.)

Pemphigus may occur at any period, from a few days after birth to the ninth year:—it is most frequent, however, within the first year. (Willan.) Its causes are evidently impure and confined air, neglect of domestic and personal cleanliness, deficient or unwholesome nutriment, and the effects of cold and damp:—it is hence almost exclusively confined to the offspring of the poorest classes, among whom it often prevails epidemically. (Stokes, Spear.) There is reason to believe, however, that like infantile erysipelas, the disease is, in some way, connected with puerperal fever, affecting particularly the offspring of mothers who become attacked with the latter disease. (Dendy.)

It is said to be more prevalent in summer than in winter. (Stokes.) This, however, is contrary to our experience, the few cases we have met with—the disease, being one of comparatively rare occurrence in

Philadelphia and its vicinity—all occurred in the winter.

The treatment of pemphigus, as it occurs in children, should be commenced by the removal of the patient, whenever it is possible, to a pure, fresh atmosphere, cleansing his skin by the use of the warm or tepid bath, and if there is no affection of the digestive organs present to forbid it, furnishing him with wholesome nourishing food. If the disease is seen in its earliest stage, and tenderness of the epigastrium, with derangement of the bowels be found to exist, a few leeches should be applied to the abdomen, and followed by warm fomentations, or the application of a warm, emollient cataplasm, and internally small doses of calomel, ipecacuanha, and extract of hyosciamus, and an occasional dose of castor oil, may be given; if, at the same time, there exist much heat and dryness of the surface, some gentle diaphoretic² will be proper, with frequent tepid sponging. On the formation of vesications, the warm bath and fomentations of an infusion

of camomile, and the sulphate of quinia internally, in conjunction with the mineral acids, if the state of the bowels will permit of their use, should be administered. If the vesications are very large, they should be punctured, and the ulcerated surface washed with a very weak solution of the nitrate of silver:—at the same time the patient should be put upon a mild, but nourishing diet.

*R.—Acetat. ammoniæ, Tviij.
Aq. camphoræ, Jij.
Vin. ipecac. Jj.
Tinc. hyosciami, Jj.
Syrup. Limon. Jij.—M.
Dose, a teaspoonful every three hours, for a child two years old.

In the gangrenous or phagadenic form of the disease, an ointment prepared from the great fig-wort, (Scrofularia nodosa,) has been found particularly successful in causing the ulcers to assume a healthy condition, and cicatrize. (Stokes, Maunsell.) This remedy was introduced by Dr. Stokes, the elder, of Dublin, who found it in use among the Irish peasantry. His practice was, at first, to apply a carrot poultice, or one of porter and oatmeal; this was kept on for about eight hours; when removed, the ulcerated surface was gently wiped with lint, and the ointment of scrofularia, previously melted, was spread over it carefully, by means of a soft feather; the ulcer was then dressed with the ointment, to which an eighth part of wax had been added, the dressing being repeated, in severe cases, every fourth or sixth hour. Dr. Stokes also directed the internal use of yeast, which he believed to be of service.

In a comparatively chronic form of pemphigus, the employment of iodine has been found to be attended with the most decided benefit. (Maunsell.)

24.—Purpura.

A subcuticular extravasation of blood, occurring without external violence, and not disappearing upon pressure; sometimes accompanied with homorrhage from one or other of the internal organs, and appearing either with or without febrile reaction. The appearance of the skin at the parts at which the extravasation takes place, differs in different cases; thus, the extravasation may appear in the form of minute red, or violet coloured spots, (petechiæ,) or of patches, of a ruddy violet colour, often livid, and sometimes quite black; generally of a deeper hue in the centre than at the circumference, and varying in diameter from a few lines to several inches, (ecchymoses.) Both varieties of extravasation are very generally observed in all cases of purpura.

In some cases, purpura occurs without being preceded by any marked disturbance of health, though usually the patients exhibit considerable lassitude, dejection and fretfulness, with indications of general debility, for some days previous to its appearance; and it is

unattended throughout with any degree of febrile excitement. (P. simplex.) The subcuticular extravasation may consist entirely of petechiæ, having some resemblance to flea bites, but not quite so large, unsurrounded by an areola of inflammation, and unefficeable upon pressure; or the petechiæ may be intermixed with ecchymoses—occasionally, but very rarely, the extravasation appears only in the latter form. (Rayer.) The petechiæ may occur only upon particular regions, or be disseminated over nearly the whole surface of the body; they may occur in every part at the same time, or appear successively during several days—when in place of being all of the same hue, they will vary from a reddish purple, or brown, to a clear or faint yellow. Petechiæ occur principally upon the legs, but numbers are often seen upon the face, in which cases, a number of ecchymoses are often seen upon the conjunctivæ.

The extravasations constituting P. simplex, are always unattended with local heat or pain, or any febrile excitement, and occasionally without the least apparent disturbance of either of the principal func-

tions of the system.

Soon after their formation, the petechiæ undergo a change of colour, passing from reddish brown, through various intermediate shades, to yellow; and most commonly, the blood is entirely reabsorbed in twelve or fourteen days. Occasionally, the spots of extravasation form a slight eminence, of the size of a pin's head, caused by a minute drop of blood being effused immediately beneath the cuticle, which it raises. On the drying of the blood, a small dark crust is formed.

(Rayer.)

When the eruption of petechiæ is considerable, they are sometimes, at particular parts of the surface, collected into irregular clusters. In a few very rare cases, there is observed, interspersed among the petechiæ, a kind of marbling, of a light violet colour, like the cruption in rubeola nigra. Occasionally there are very few or no petechiæ, but considerable numbers of ecchymoses, disseminated over the body and limbs, particularly over the dorsal surface of the feet and hands, and the inner surface of the extremities. They resemble, often, the marks left by the strokes of a whip; their colour, which is of a dark or livid blue, fades very slowly. These ecchymoses are, in some cases, succeeded by an exfoliation of the cuticle, particularly when the latter has become detached by the quantity of sanguinolent serum effused beneath it. In some instances, the effusion is to so great an extent as to produce bullæ or phlyctenæ. (Rayer.)

The blood, in certain cases, is effused into the subcutaneous and intermuscular tissues, and then the skin commonly presents a number of broad, slightly prominent spots, dark in the centre, and of a greenish vellow towards the circumference, and unattended with pain. Sometimes the backs of the hands are affected with a species of

ædema.

In a few instances, the subcuticular extravasation is preceded by somewhat prominent, reddish, oval, or circular spots, accompanied by

a smarting or tingling sensation, similar to, but not so decided as that of urticaria. (P. urticans.) These spots, at the end of two or three days, sink to a level with the skin, and acquire a dark red, or liver colour; new spots, at the same time, making their appearance. They are sometimes intermixed with true petechiæ. P. urticans occurs most frequently upon the legs, which are often ædematous, or affected with a sensation of stiffness or heaviness. The eruption generally continues for a month, but may be of longer duration.

Immediately upon the disappearance of the petechiæ and ecchymoses, in cases of P. simplex, they, in some cases, return suddenly, in a single night; these hæmorrhagic phenomena may be repeated several times, at very short intervals, prolonging the duration of the dis-

ease to several months.

When P. simplex presents itself under the form of ecchymoses, it is generally a more serious disease than when it appears under the petechial form; the P. urticans is the least important of all the forms of the disease.

A much more serious form of purpura is that accompanied with hæmorrhage. The body is often covered with livid spots, similar to those that follow bruises; actual thrombus occasionally forms under the hairy scalp, and the blood has even been seen exuding from behind the ears, and from the vertix; the subcuticular and cutaneous effusion covering nearly the whole surface. (Rayer.) The disposition to hæmorrhage in some patients is so great, that the mere act of feeling the pulse, the pressure of a simple ligature, or the weight of the body in sitting, leaning or lying down, is sufficient to cause actual ecchymoses. In such cases, the slightest puncture, the mere grazing of the skin, is followed by a copious and continued discharge of blood; and most commonly, either from the commencement, or in the course of the disease, hæmorrhages occur, to a greater or less extent, from the nose, bowels, stomach, or lungs. (P. hamorrhagica.) In some of these cases, the whole fauces are of a dark red colour, and blood issues from every part of them. P. hæmorrhagica is sometimes complicated with angina membranacea; (Rayer;) occasionally, the gums are livid and spongy, and blood exudes from their surface; the tongue is swollen, livid and blackish; the inner surface of the cheeks presents some blackish and soft patches, and with these the palate is also covered. On all these parts, irregular phlyctenæ, or bullæ appear, filled with dark coloured blood; when these burst, a discharge of blood takes place from the excoriated surface; deeper ulceration sometimes occurs with hamorrhage to a much greater extent. Children have been known to die in a single night, from hæmorrhage, in such cases.

When, in P. hæmorrhagica, the discharge of blood is very considerable, or recurs frequently, the feet and legs become ædematous, the face blanched, and the surface of the body generally, of a yellowish, or livid hue; the petechiæ and ecchymoses increase in number, with a deep brown tint; the blood becomes more and more serous; the

temperature of the body, but particularly of the extremities, sinks; the pulse becomes small and feeble, and the strength of the patient completely prostrated. Convulsive movements, tremors of the whole body, or fainting fits, sometimes occur. The patient finally dies exsanguine, unless febrile symptoms, or serious internal disease should

ensue, previously to death.

Purpura is occasionally accompanied by febrile reaction. (P. febrilis.) The occurrence of petechiæ and ecchymoses, in this form of the disease, is preceded by a sense of extreme lassitude and depression, and by shivering fits, of longer or shorter duration, succeeded by increased heat of the skin, pains in the back and limbs, headache, quickness of pulse, nausea, retching, or vomiting. The subcuticular extravasations appear between the third and sixth days, sometimes with hæmorrhage from the mucous membranes, and at others, preceded by exanthematous spots, similar to those of urticaria febrilis. Febrile purpura may appear under the form of ecchymoses. (Ollivier D'Angers.) In some cases, it is attended with hæmorrhages from the nose, throat, stomach, intestines, &c.; (Reil;) in other cases, these latter occur without the subcuticular hæmorrhage. (Poterius, Morgagni, Littré.)

Febrile purpura may present, from the commencement, very serious symptoms, and prove fatal in a few days, in consequence of sanguineous effusion in the lungs, or substance of the brain; or it may terminate in death more slowly, in consequence of the extent of the

hæmorrhage, or the gradual draining away of the blood.

The causes of purpura are extremely obscure:—it is of much more frequent occurrence before than after the period of puberty, and attacks, unquestionably, most generally such children as are exposed to the debilitating influence of an impure and confined, or cold and damp atmosphere, and who are badly fed, or on improper food, and debarred from sufficient exercise; (Willan, Graves;) but at the same time, it must be admitted, that it is frequently met with in robust children, of full habits, and apparently in the enjoyment of perfect health. Some children appear to be peculiarly predisposed to attacks of purpura, and this often happens in all the children of the same family, as we have repeatedly observed. It has been supposed, in some cases, to be hereditary. It occasionally occurs subsequent to small-pox, measles, and other acute affections. (Bateman.) It has been maintained, that in all cases, venous plethora is necessary to the production of purpura; (Mills, Parry, Combe;) and in many cases, there exist strong evidences of an overloaded state of the portal system, with more or less derangement of the digestive organs; the bowels are often torpid, or in a state of constipation, and when evacuations are procured, these are often of a most vitiated character. (Harty, Buxton, Rogerson.) Pain of the epigastrium, or hypochondria, or tenderness upon pressure, with swelling and tension of these parts, are frequent symptoms of the hæmorrhagic cases. (Willan.) In mild cases of purpura simplex, a proper regulation of the diet

and regimen, with the warm or tepid bath daily, a full dose of calomel, followed by castor oil, or the citrate of magnesia, and when, by these means, the bowels have been fully evacuated, small doses of calomel, calcined magnesia, and ipecacuanha, in combination, three times a day, with free exposure to a fresh, pure atmosphere, will, in

general, be sufficient to effect a cure.

In the more severe cases of P. hæmorrhagica and P. febrilis, the remedies must be adapted to the circumstances of each case; where there exist evident indications of hyperæmia, or venous plethora; or much local pain or tenderness, with fullness and tension of the abdomen generally, or at the epigastrium or hypochondria, a cautious abstraction of blood from the arm, or, locally, by leeches, will occasionally be advisable. (Bree, Parry.) It must be admitted, that in young children, bleeding is a remedy not generally adapted to this disease; the bites of the leeches we have often known to give rise to a long-continued hæmorrhage, by which probably a fatal result was caused, in cases, where, had the leeches not been applied, the disease might have been cured; on the other hand, we have known the loss of a few ounces of blood from the arm to be followed by so great a degree of exhaustion, as to demand an immediate resort to stimulants, to prevent the death of the patient; at the same time, in children over ten years of age, we have certainly seen the very best effects result from the cautious abstraction of blood, particularly by the lancet.

In every case, our chief attention should be directed to the condition of the bowels. Full doses of calomel, in combination with magnesia or jalap, and followed, in a few hours, by a mixture of castor oil and turpentine, will have the effect, very generally, of bringing away large quantities of vitiated secretions; of unloading the portal system, and exciting a more healthy action throughout the entire extent of the gastro-intestinal mucous membrane; and by the continuance of the turpentine, in tolerably large doses, with an occasional dose of calomel, we shall soon correct the character of the intestinal evacuations, and, at the same time, effect a cure of the disease. (Bree, Harty, Rogerson, Buxton, Nicholl.) Under the purgative treatment, we have seen the most rapid changes produced in all the more serious phenomena of purpura hæmorrhagica, and a striking amendment occur in the condition of the patient, the moment that large evacuations were procured from the bowels, of dark olive green, and highly offensive faces. The drinks of the patient may be acidulated with lemon juice, and they should be given perfectly cold; the diet should be light and unirritating, and composed of articles of a nourishing kind.

When decided debility exists, the sulphate of quinia, the dilute mineral acids, and a nourishing diet, with, perhaps, in extreme cases, wine whey, or wine and water, or diluted malt liquors, will be demanded; attention being, at the same time, paid to the bowels; in such cases, the spirits of turpentine and castor oil will form the most efficient and appropriate purgative. Care must be taken, however,

not to mistake mere oppression of the vital functions for debility, or to commence with tonics or stimulants too early, in any case; when this is done, we have repeatedly seen the tonic treatment increase the number of petechiæ, augment the hæmorrhage from the mucous membranes, and excite a violent febrile reaction, quickly followed by collapse and death.

FROM ORGANIC DISEASE.

25.—Cyanosis—Morbus Cœrulcanus.

BLUE DISEASE.

A blue, purple, or leaden tinge, more or less deep, of the entire surface of the body, but particularly marked in the lips, cheeks, and nails; accompanied with a reduction of temperature, and occasional paroxysms of difficult respiration, approaching to complete asphyxia, during which the blueness of the skin becomes more intense, and more generally diffused over every part of the surface. These paroxysms are brought on by whatever hurries the circulation—as a quick motion of the body, crying, and, when the child survives long enough to be able to walk, by going up or coming down stairs, by emotions of the mind, &c. When the paroxysms are severe, there is a cessation of respiration and circulation, the extremities become perfectly cold, and the patient falls into a state resembling death. After a few moments' rest, however, the child again breathes, the circulation is restored, the colour of the skin becomes lighter, and he recovers his ordinary state of health; finally, however, a paroxysm more severe than usual occurs, during which life is extinguished. In some infants, even the effort of sucking often induces so great an embarrassment of the respiration and circulation, as to bring on paroxysms, which are occasionally accompanied with convulsive movements.

When the patient affected with cyanosis has arrived at the age of childhood, he is indisposed, and often unable to participate in the sports of other children, but crouches over the fire, even in summer, languid, chilly, and dispirited. The ends of the fingers and toes are often bulbous as well as discoloured; there is a tendency to cough on the least muscular exertion, and congestion of the lungs very frequently manifests itself under the influence of slight exciting causes. (Joy.) The discoloration of the skin and interior of the mouth, is sometimes as deep as the stain of the small black cherry. (Hope.)

Notwithstanding the majority of cases terminate fatally at an early period of infancy, or at furthest, during childhood, there are cases on record, in which patients labouring under cyanosis, have lived twenty, forty, and even fifty-seven years, death being produced by the supervention of some other disease. (Louis, Frank, Wolff.)

Cyanosis is, in the majority of cases, evident from the moment of

birth, or presents itself within a day or two subsequently. There are cases, however, upon record, in which it first made its appearance in the adult, after severe falls, or blows, prolonged fits of coughing, or violent and fatiguing muscular efforts. (Frank.) One very curious case is related, in which the disease occurred suddenly on the ninth day after birth, subsequent to a convulsive attack, and completely disappeared upon the twelfth day after its invasion. (Hufeland.)

The production of cyanosis has very generally been attributed to an admixture of the arterial and venous blood, in consequence of a persistence of the communication which exists, in the fætal state, between the auricles, or, of some malformation of the heart or cardiac vessels. In 53 dissections of patients affected with cyanosis, the foramen ovale was open in 33; in 22 the aorta rose from both ventricles; in 22 the pulmonary artery was contracted; in 14 the ductus arteriosus was open; in 15 the ventricular septum was imperfect; in 5 the pulmonary artery was obliterated; in 4 there was but a single auricle and ventricle; (noticed also by *Hope*;) in 4 there was a transposition of the origin of the aorta and pulmonary artery, with an open state of the foramen ovale, and in a few, of the ductus arteriosus, also; in one the aorta was obliterated. (Gintrac.) The right cavities of the heart are frequently found dilated, hypertrophied, or both. (Bouillaud, Trotter, Bertin, Hope.) The hypertrophy is always most considerable in cases in which there exists contraction of the pulmonary orifice. (Hope.) The total absence of the ventricular septum, has been noticed in some cases; (Hope, Wolff, Breschet, Farre;) in one case, the heart consisted of a single cavity; (Thibert;) in another the pulmonary artery arose from both ventricles, sending off the descending a orta; (A. Cooper;) in another, the right auricle opened into the left ventricle, and a free communication existed between the two ventricles, and the two auricles; (Holmes;) in others the right ventricle was bifid; (Kerkringius;) the arch of the aorta double; (Bertin;) the coronary veins opened into the left ventricle; the inferior or the superior cava into the left auricle; the foramen ovale was closed in the fatus; the valves of the heart adhered along their edges, and were consolidated into one substance, leaving only a small central aperture, or else were perforated by numerous holes, or altogether absent. (Morgagni, Bertin, Laennee, Destrés, Joy.) The instances of a single auricle and single ventricle are very numerous. (Meckel, Hunter, Sandifort, Abernethy, Cruikshank, Hoffman, Corvisart, Kreysig, Senae, Wolff, Prochaska, Hartman, Tiedemann, Lexis, Bird, Warnatz.) Considerable contraction of the pulmonary artery, particularly at its origin, is a very common lesion: (Trotter, Lentin, Wolff, Lexis, Hunter, Hope, Sandifort, Abernethy, Stenson, Nevin, Duret, Caillot:) in a few cases, the pulmonary artery has been found completely impervious; (Duret, Caillot;) in one case the artery was entirely absent, the bronchial arteries appearing to supply its place; (Ramsbotham;) and in another, the aorta terminated near the heart, in a eul de sae. (Romberg.) In one case there was an entire absence of the right lung, the septum between the ventricles of the heart was imperfect, the foramen ovale and ductus arteriosis were both open: the aorta communicated with both ventricles; the pulmonary artery was imperforate at the base of the heart; the lung being supplied with blood by the arterial duct:—the child lived six weeks. (Wockenschrift für die

gesammte Heilkunde, 1837.)

Sufficient evidence is thus afforded, that abnormal communications between the cavities of the heart, particularly the auricles, by the non-closure of the foramen ovale; and various malformations of that organ, and of the main arterial and venous trunks, occur, in perhaps the majority of cases of cyanosis. By far the most frequent, however, is the non-closure of the foramen ovale; how far this is capable of producing the disease under consideration, is a question, however, that is yet by no means satisfactorily answered. The mixture of the arterial and venous blood, which is supposed to result from the free communication between the two auricles, is evidently inadequate to explain the blue colour of the skin, inasmuch as no such discoloration takes place in the fætus; (Fouquier;) while a communication exists in the majority of infants for many days after birth, without a single symptom indicative of cyanosis being present. The fætal openings in the heart, and the communication between the aorta and pulmonary artery, by means of the ductus arteriosus, are not usually obliterated before the eighth day subsequent to birth, and have even been found open as late as the third week, in infants who have died of diseases totally unconnected with any disturbance of the respiratory apparatus, in the slightest degree resembling that which occurs in cyanosis. (Billard.) It has been shown, in numerous instances, that the foramen ovale has remained open for a very considerable period, without the occurrence of cyanosis; (Corvisart, Meckel, Gintrac, Marc, Crampton;) and it has been denied that any admixture of venous and arterial blood can take place, even with a free opening between the two auricles, from non-closure of the foramen, so long as the communicating cavities are of equal strength, or provided all the orifices are free. (Cloquet, Louis.) Cyanosis has occurred in numerous instances in which no abnormal condition of the heart, or main arterial trunks, existed; (Corvisart, Wolff, Frank, Heischman, Kwiatwoski; and it has been absent in cases in which extensive malformation of the heart was present. (Ribes, Breschet.) It is very improbable indeed that, so long as the lungs continue to perform fully their office, and a sufficient supply of oxygenated blood is regularly distributed to the different parts of the body—even although this should be mixed with a portion of venous blood, the phenomena of cyanosis can occur: these depend, evidently, upon a disturbance of the function of the lungs, by which the due arterialization of any portion of the blood is prevented; or upon such a malformation of the heart, or abnormal distribution of the main arterial trunks, that venous, instead of arterial blood, is distributed to the organs. It may, therefore, exist without any abnormal condition of the heart, if from any cause, the blood, in passing through the lungs, is prevented from undergoing the changes which it

is the office of these organs to effect in it; while even with extensive malformation in the circulating organ, it will not occur, so long as the lungs perform their functions freely. Cyanosis is common in many of the pulmonary affections occurring during infancy: (Laennec, Billard:)—it is also invariably present in that condition of the lungs, resulting from imperfect respiration, denominated atelectasis. (Jörg, Lhommeau, Kwiatowski, Frank.) It has been found associated with enlargement of the heart, contraction of the pulmonary arteries, and extensive "tuberculous hardening" of the lungs; (Lentin;) with contraction of the diameter of the glottis and trachea; (Heischman;) with extensive disease of the brain or spinal marrow, without any abnormal changes in the heart, lungs, or great vessels, (Frank,) and with severe abdominal inflammations. (Broussais.) It is also asserted that many cases of cyanosis, owe their origin, in the adult female, to some disturbance of the menstrual function, especially to sudden suppression of the discharge. (Journ. Hebdom. No. 33.)

It has been supposed that the contraction of the pulmonary artery, which is so frequently met with in those who have perished after labouring under symptoms of cyanosis, is the chief cause of the non-closure of the foramen ovale, in consequence of the constant state of over-distension which it keeps up in the right cavities of the heart.

(Louis, Frank.)

Cvanosis, whether congenital or acquired, is very rarely cured. If, as already remarked, the infant survive the first few days or weeks, it may live on to puberty; but an aggravation of the symptoms every now and then takes place, and these paroxysms are liable to be very severe at the period of weaning, during dentition, or when the child begins to walk, and at puberty: if this latter period be passed, the patient may live to eighteen, twenty, thirty, forty, sixty years, or even to extreme old age. The chances of life depend pretty much upon the nature of the organic disease present, and of the accessory morbid phenomena; thus, in a child whose pulmonary artery was found completely obstructed, death took place on the thirteenth day from birth; while in three patients, in whom the foramen ovale and ductus arteriosus were simultaneously patescent, one lived seventeen, another twenty-nine, and the last forty-two years. A few cases are on record, in which the phenomena of cyanosis, after continuing for a very considerable time, finally, entirely disappeared; and in cases connected with certain affections of the lungs, intestinal canal, uterus, and brain or spinal marrow, the cyanosis has disappeared with the cure of the pulmonary, gastro-intestinal, uterine, and cerebral disease. As a general rule, however, the disease is entirely beyond the control of medicine. It is said to prove more quickly fatal in males than in females; and the mortality is certainly greater in winter than in summer. (Jour. Hebdom. No. 113.)

It is unnecessary to say any thing on the treatment of cyanosis; if the pathology of each case be attentively and carefully examined, and the true character of the disease be kept in mind, it will be easy to adapt our palliatives to the most urgent distress. The patient, in every instance, should be kept as much as possible in a state of rest, and every thing should be avoided, liable to produce mental or physical excitement, or in any manner to hurry the respiration or circulation. He should enjoy a pure, fresh atmosphere, gentle, passive exercise, and be allowed a mild, easily digested diet; his bowels should be kept perfectly free, and his body be carefully protected from cold or damp.

When cyanosis appears in a new-born child, and persists after respiration is established, it has been recommended to employ gentle frictions over the head and body, while the infant is held near the fire, with a warm, soft cloth. The frictions should be perseveringly continued, attention being, at the same time, paid to procure a free

evacuation of the meconium. (Corvisart.)

FROM INFECTION INDEPENDENT OF VISCERAL DISEASE.

26.—Psora—Scabies—Itch.

The itch makes its first appearance usually between the fingers, about the wrists, and upon the backs of the hands, in the form of minute vesicles, filled with a colourless, transparent fluid, intermixed with small papulæ, which likewise assume, in a short time, the vesicular character. The eruption is attended by intense itching, which is always increased by whatever elevates the temperature of the part. Frequent friction and scratching, to allay the itching, produces speedily an inflammation, and the rupture of the vesicles, by which means the disease is extended to the surrounding skin. When the skin is very irritable, the vesicles of psora, soon assume an opaque appearance, and are converted into true pustules, which sometimes attain a very considerable size. Hence, when the malady is of some standing, there may exist, at the same time, papulæ, vesicles, and pustules, of various dimensions, interspersed:—a feature which, in connection with the excessive itching and irritation, will readily distinguish the itch from any other cutaneous affection. Though in its commencement, the disease is, in the majority of cases, confined to" the fingers, wrists and hands, it may, however, extend to nearly every part of the body; in such cases, being most severe and troublesome about the trunk, margins of the arm-pits, and flexures of the joints, in consequence of the warmth generated by the clothing, and the friction excited by the motions of the body. The papulæ, vesicles and pustules, often give rise to dark points, or dark brown crusts; caused by the desication of the matter discharged by them. The pustules sometimes, when neglected, coalesce, and, when ruptured, form ulcerations, upon which dark brown scabs are apt to form.

Psora, in the great majority of cases, is unquestionably produced from the direct contact of the fluid matter of the vesicles, by the touch of an infected person, by handling, or wearing their clothes, sleeping in the same bed, &c. It is increased in extent and virulence, by a neglect of personal cleanliness, either in regard to repeated ablutions of the surface, or frequent changes of linen; and, by this means, many suppose that the disease may be generated, independent of infection.

In its early stages, psora is entirely unconnected with any other disease. When, however, it occurs in children who are debilitated, or otherwise unhealthy, it not unfrequently gives rise to a troublesome impetiginous affection of the skin, which may continue long after its specific character has been destroyed. (S. cachectica.) Psora is said never, or at least very rarely, to terminate spontaneously; when not subjected to a proper remedial treatment it may continue during the lifetime of the patient, which it seldom tends to shorten. (Andral.)

Psora, presents itself under its most aggravated forms, almost exclusively among the miserably poor; it is, however, met with more frequently in some countries, and situations, than in others. It is, in

some degree endemic, in all cold and mountainous regions.

In many cases of psora, particularly when neglected, an insect is to be seen, in or near the vesicles, (scabies vermicularis, acarus scabiei.)

It is usually found beneath the cuticle, in a small spot close to a vesicle, to which it is connected by an irregular dotted line, which marks the burrowing course of the insect. If this spot be punctured, upon careful examination, the insect, somewhat resembling a cheese mite, may be seen, and abstracted upon the point of a needle. Of the existence of these insects, there can be no reasonable doubt; but how far they are essential to the disease, and whether the latter is produced by them, are questions not so readily solved. The affirmative has been recently strongly maintained, by several of the French and German physicians. (Galès, Raspail, Aubé, Gras, Pariset, Krause, Baum, Swartz, Krukenberg.) While there are others who consider the insect as a mere parasite, in no way concerned in the production of the disease; the supposed cases in which the itch has been communicated by transferring the acarus to the skin of sound persons, being ascribed to the virus adhering to it. (Pentzlin, Rickman.) This latter we feel disposed to adopt as the correct view; for it is extremely difficult, to reconcile the ease with which the disease is communicated by mere contact, if the transfer of one of the insects (sarcoptes scabiei,) be necessary to produce it; especially when we are told of the difficulty of extracting these from their burrows beneath the cuticle. It is said, that the disease cannot be communicated by inoculation with the fluid of the vesicle: (Mouronval, Lugol, Gras;) this we believe to be an error:—we knew the disease to be produced in one case, by an individual who put on a pair of gloves that had been worn four months previously by a person affected with the itch, and which had lain in a drawer from that period.

It is supposed by some, that itch may be communicated to man from the dog and other domestic animals. Several workmen at the Jardin des Plantes, of Paris, are said to have contracted the disease,

by attending upon a diseased camel. (Andral, Cazenave.)

The disease may be communicated to infants and children at any period from birth to puberty; it generally occurs about four or five

days subsequent to exposure to its contagion.

A great variety of external as well as internal remedies have been proposed for the cure of scabies. They have all, no doubt, frequently succeeded; they are all, however, inferior in certainty, in the ordinary forms of the disease, to the external application of sulphur, either in the form of ointment, or fumigation; and its internal use, in the form of the precipitated sulphur, mixed with milk or molasses. In the cases of scabies usually occurring in children, the ordinary unguentum sulphuris of the shops, will answer every purpose; but in more obstinate cases, the compound sulphur ointment of the United States Pharmacopæia, may be employed. An ointment composed of one part carbonate of potassa, two of sulphur, and eight of lard, is preferred by many of the French practitioners. (Cazenave, Schedel.)

Whichever of these ointments is used, it should be well rubbed into the affected parts, night and morning, for the space of one week; by which time, or perhaps earlier, in slight cases, the disease will be entirely cured. On ceasing the use of the ointment, the child should be immersed in a warm bath, and the entire surface of the body well washed with soap. In children of four or five years, and upwards, the common soft soap may be used, which, by some of the recent German physicians, is asserted to be itself, an excellent remedy in cases of inveterate itch. (Graff, Bergmann, Pfeuffer, Cless, Sicherer,

Wolff, Keinmar.)

During the external employment of the sulphur, a portion of it, from ten grains to half a drachm, according to the age of the child, should be given, night and morning, in milk or molasses; in plethoric or robust children, over two years of age, an equal portion of the bi-tartrite of potassa, may be added to the sulphur, and given in simple syrup or molasses. The diet should be perfectly plain and easy of digestion. After the cure is effected, no portion of the clothing or bedding should be used, that was in contact with the patient whilst he laboured under the disease, until it has been thoroughly purified, and well aired. In many cases, an ointment of the hydriodate of potassa, will prove a very efficient remedy; made by adding one drachm to one ounce of lard; we have used it with complete and prompt success, in numerous instances. An ointment composed of half a drachm of sulphuret of lime, mixed with a little olive oil, and rubbed upon the palms of the hands, twice a day, for ten or fifteen minutes each time, will, it is said, prove, also, an efficient remedy. (Joy.)

The sulphurous water bath has occasionally been employed; but is by no means so prompt and certain in its effects, as the sulphur vapour bath; this constitutes the principal remedy of Gales, and it has been strongly recommended by other physicians, who have subsequently employed it. (Horn, De Carro, Wallace.) In children of eight, ten, and twelve years of age, we occasionally meet with

cases of the disease, in which, from neglect, and personal uncleanliness, it has been allowed to spread over a considerable portion of the body, and in a form of considerable severity;—to these cases, the sulphur vapour bath is well adapted. The number of fumigations necessary, will depend very much upon the character of the disease in each case, the degree of irritability of the skin, &c. When a proper apparatus can be procured, this should be invariably employed; but if this is not at hand, blankets may be saturated, with the vapour of sulphur, by means of sulphur stewed upon burning coals, enclosed in a warming pan; the patient being placed between the blankets, naked, and covered closely up to the throat.

A great variety of other modes of treatment, and various forms of ointment, have been proposed, none of which, however, in the case of children, are equal in efficacy to those detailed. It is asserted that an ointment composed of one part of tar, and two parts of salt butter, melted together, with the addition, while fluid, of one part of carbonate of potassa, will remove the disease, if applied once in twenty-

four hours, in seven days. (Pentzlin.)

The following ointments have been found occasionally very useful, in the treatment of scabies of infants. We annex them, not because we prefer them to those we have already given, but because cases may occur, in which, from a variety of circumstances, it may be useful to resort to one or other of them.

R.—Creasot. M xxx. Cerati, Ol. Amygdal. dulc. aā Ji.—M.

R.—Hyd. Oxyd. alb. 9j. Adipis, Ziv.—M. R.—Calcis Chlorid, Jij. Adipis, Jviij.—M.

R.—Carb. potassæ, Tij. solve in Aquæ, Tj. dein adde, Ol. Olivæ, Tiv. Camphoræ, Tij.—M.

In every case of scabies occurring in robust and plethoric children, if there exist considerable irritation of the skin at the parts affected with the disease, it will be proper to commence the treatment by emollient poultices, warm fomentations and brisk purgation; and should the local symptoms be very considerable, the application of leeches, or even the drawing of a few ounces of blood from the arm. The same treatment will be proper, should any considerable degree of local irritation or inflammation occur during the use of the sulphur or other ointments. These latter will always be found to act more effectually, by the reduction, in this manner, of the irritation.

If the child affected with scabies be debilitated, or labour under any other disease, the remedies adapted for the latter should be combined with the treatment required for the removal of the former.

27.—Syphilitic Eruptions.

Infants are liable to be infected with syphilis, either before birth, during birth, or during lactation. Children born of mothers who are

labouring under the venereal disease, may exhibit indications of syphilis at birth; or these may not appear for many days, weeks, or months subsequently. Syphilitic children, are frequently born prematurely, or dead, with the cuticle separated, or peeling, from different parts of their bodies, or in a state of gangrene; abortion is a very

frequent consequence of intra-uterine infection.

It is a curious circumstance, that during the entire period of gestation, at the period of conception, or even for some time previous, neither parent may have exhibited any symptoms of disease, and yet the fœtus may become infected in consequence of an attack of syphilis in one or other parent, which had, to all appearances, been fully eradicated, years before marriage. Of course, in cases like the present, in regard to which there exists so many powerful motives for concealment, or deception, there will always remain considerable doubt as to the fact of the entire freedom from disease of the parents, at the period of impregnation, and during gestation; and yet we have met with frequent instances, in which we have every reason to believe that such was actually the case; and a similar statement is made by others. (Burns, Veggio, Maunsell, Dendy.) It is true, that in some of the numerous cases, recorded in the continental journals, of syphilitic children, born of parents in whom no vestige of the disease existed, eruptions of the skin of a non-venereal character, may have been mistaken for those of syphilis. (Chapman.) How far confidence is to be placed in the statements made, of the fœtus being liable to infection, in consequence of the father being, or having been, diseased, while the mother is, and always has been, perfectly healthy, we are not prepared to offer any positive opinion; we have, however, certainly met with cases which would appear to establish the fact.

Intra-uterine syphilis, generally presents itself in the form of red or brown, or fawn-coloured blotches, varying in size, and slightly raised above the level of the surrounding skin. From the surface of these blotches, a very slight moisture exudes, which, in parts exposed, on drying, gives to them a scaly appearance, and at length forms thin scabs, of a dark yellow, or brownish colour, which re-appear as often as they are detached. The eruption usually occurs first upon the lower extremities, buttocks and loins, but subsequently extends to the rest of the body, as well as the face. When the blotches appear about the verge of the anus, between the buttocks, and in the folds of the thighs, and neck, the continual moisture and friction of the parts, prevent the formation of crusts, but irregalar tubercular swellings (condylomæ,) occur. With the progress of the disease, the skin becomes throughout, of a reddish brown or fawn-colour. The infant is, at the same time, feverish, fretful, and gradually wastes away; the voice becomes feeble and hoarse, and there is a constant discharge from the nostrils, of a yellow, viscid mucus, which quickly dries about the external orifices; the nose becomes swollen, and perpendicular fissures, occur in the lips, giving a very peculiar appearance to the mouth; the whole countenance assumes a wrinkled, dejected appearance, and the infant exhibits evident indications of suffering, from deep-seated pains in the cylindrical bones. It becomes more and more feeble and emaciated; ulcerations present themselves upon various parts of the skin; the inside of the mouth, and surface of the tongue, are often covered with apthæ, and the infant finally dies, in a

state of extreme debility and excessive emaciation.

Such arc the usual phenomena and progress of syphilitic eruptions, from intra-uterine infection;—though we have known infants to be born with irregular ulcerations, or with large vesications of different parts of the surface, filled with a yellow, turbid, or dark-coloured fluid, and which, upon rupturing, left ulcerations of the skin, quickly covered with thin dark crusts, surrounded with a dark red, or purplish margin.

It has been doubted, whether the venereal disease is ever communicated to the infant during birth; the *vernix caseosa*, being supposed to afford a sufficient protection to the skin, against infection. (*Jahn.*) It is certainly not very common to find the disease communicated in this manner; and we believe, that when such is the case, it presents

itself, most generally, under the form of purulent opthalmia.

Transmission by the nipple of a diseased nurse, is a very frequent mode in which infants are infected with syphilis. Ulcers, in this case, are generally formed in the mouth of the child, which are often entirely overlooked; or, when first noticed, are liable to be mistaken, even by the physician, for the ordinary cruption, so common in children during lactation. The true character of the disease being thus seldom recognised in its first stage, it generally comes under treatment only after blotches and ulcerations have made their appearance upon the skin, when its characters are the same precisely as those described above.

It is a very common thing for syphilitic eruptions in infants to entirely disappear, under an appropriate treatment; but to again return, sooner or later, after this is suspended; and thus to occur repeatedly, until, finally, every vestige of the disease is eradicated. This should serve as a caution to the young practitioner not to pronounce the child entirely cured, until several months have elapsed

without any symptoms of the disease re-appearing.

The diagnosis of syphilitic eruptions in infants, is not always very easy; they, in many cases resemble very closely, psoriasis, or lepra, or some of the more inveterate forms of scabies. The physician who has seen a good deal of the discase, will seldom be deceived; but the young practitioner must depend upon a cautious investigation of its history, without, if possible, exciting suspicion in the minds of those interested; an incautious hint, or imprudent question, might have the effect of destroying domestic peace, or, at least, of deeply wounding the feelings of a mother, in cases where the conduct of neither parent is, in the slightest degree, concerned in the production of their infant's malady. In every instance should the expression of opinion be very guarded.

The treatment of infantile syphilis is extremely simple; and, when

judiciously earried into effect, at an early stage of the complaint, is, very generally, successful in its cure. One or two grains of hydrargyrum cum creta, two, three, or four times a day, according to the age of the child; or a third or fourth of a grain of calomel, combined with chalk, ipecacuanha, and extract of hyosciamus; with the external application of the black wash, or dilute citrine ointment, to the crusts, ulcers, or condylomæ, twice or thrice a day, should be continued until the cruption and discharge from the nostrils disappear; and at longer intervals, for one, two, or three weeks subsequently. By this plan of treatment, we have generally succeeded in the removal of the disease, in one month, in recent cases; but in those which have been neglected in their earlier stages, it will seldom effect a cure under two, three, or even four months. We are to recollect, also, the liability of the cruption to recur, when, to all appearance, it has been entirely eradicated; when the same treatment is to be again resumed.

*R.—Calomel, gr. iij.—iv.
Pulv. ipecac. gr. ij.—iij.
Cretæ. ppt. 3ss.
Ext. hyosciami, gr. iij.—iv.—M. f. chart.

No. xij.

One to be given twice a day, or every 3 or 4 hours, according to the age of the

R,—Ungt. hyd. nit. 3iij. Cerat. simpl. 3ij.—M.

Should the mercury, when given by the mouth, produce griping and purging, which we have seldom found it to do when combined with the chalk, ipecacuanha, and hyosciamus, a small portion of Dover's powder may be added to each dose; carefully, however, watching the effects of the opiate, which, in infants, often produces, even in the smallest doses, very serious effects. When the gastro-intestinal irritation produced by the calomel cannot be controlled by such doses of opium as it would be prudent or safe to administer to an infant, it has been advised to omit its use, and resort to the external application of mercury, in the form of ointment. Fifteen grains of the unguentum hydriargyri mit. may be rubbed upon the inner surface of the thighs, alternately, once in two days, until the mouth becomes hot, when it is to be intermitted; and again resumed after a proper interval, should it be necessary. (Burns.)

In children under two years of age, salivation is rarely, if ever, produced; it is necessary, nevertheless, to watch the effects of the mercury upon the gums, and if these become hot, slightly swollen, or livid, its use should be at once suspended, as in some cases gangrene has been known to result from its continuance under these circumstances. This result, however, is seldom witnessed, excepting in very

feeble ehildren.

When the external sores are very indolent, they may be washed with a weak solution of the sulphate of eopper, or of the nitrate of silver. (Maunsell.)

If we have reason to suppose that the mother or nurse is labouring under disease of a syphilitic character, and we must recollect, that

for very obvious reasons, it would be imprudent either to wean the infant, or to suckle it at the breast of a healthy nurse, we should administer to her the ioduret of mercury, with the decoction or syrup of sarsaparilla; it is true, that the milk may be thus rendered less adapted for the nourishment of the child, but it seems absolutely necessary for the effectual eradication of the disease in the infant. We would remark, that we recommend this course only in the case of the mother being actually syphilitic; we are opposed to the plan of attempting the cure of the infant, by giving mercury to the nurse, as was formerly practised.

During the course of treatment, both mother and child should enjoy the benefit of a pure, fresh atmosphere; the diet of the former should be plain, mild, and sufficiently nourishing, and her drink, water alone; it is important, also, that she take sufficient daily exercise in the open

air, and observe regularity in her hours of repose.

FROM LOCAL INFLAMMATION.

28.—Paronychia.

ONYCHIA-PANARITIUM-WHITLOW-FELON.

Children are very liable to an inflammation, occurring usually near the end of one of the fingers or toes, about the edge or root of the nail. It may be seated in the cutis, in the sub-cutaneous cellular tissue, or in the thecæ, or synovial sheaths of the tendons, particularly on the inside of the fingers. When the inflammation occurs in the cutis, we have usually the symptoms of a slight phlegmon; heat, pain, tension and redness of the part, with some degree of febrile excitement. The inflammation terminates quickly in suppuration, marked by a semitransparent elevation of the cuticle. The pus frequently travels around the finger, separating the cuticle to a considerable extent.

When the inflammation is seated in the sub-cutaneous cellular membrane, the local symptoms are more severe, there is often a decided febrile reaction, attended with distinct rigors. The suppuration occurs early, but the matter is slow in reaching the surface, and often extends laterally, burrowing beneath the nail. This form of paronychia is generally attended with very severe pain throughout its course.

The affection is of a still more severe character when seated in the thece or synovial sheaths. The pain is deep seated, and generally intense. There is often severe rigors, followed by very decided symptoms of febrile reaction from the very commencement. The swelling is more extensive than in the other forms, often spreading over the whole hand or foot, and even to the forearm or leg; distinct red lines or streaks of inflammation, probably inflamed absorbents, extending to the axilla or groin. At this period, in very excitable children, convulsive action often ensues, and very generally extreme restlessness, or delirium. From the unvielding nature of the tissues,

the matter formed, in place of reaching the surface, passes along the synovial sheaths, or tendinous thecæ, to the palm of the hand or wrist, or to the sole of the foot; producing intense suffering for weeks, and destroying the motion of the joints, causing the death of the tendons, or even, in some cases, affecting the periosteum, and causing caries

of the subjacent bone.

In children of a lymphatic temperament, or of a plethoric, but unhealthy condition of body, the inflammation is often seated in the matrix and soft parts at the root of the nail. (Onychia maligna.) The disease commences with redness, swelling, heat and tension at the root of the nail; attended with a dull, throbbing pain, great tenderness upon the slightest pressure, and shivering, succeeded by febrile excitement. From the sulcus at the lower part of the nail, there soon takes place an oozing of a thin, ichorous fluid, succeeded by ulceration, which spreads around the semicircular edge of the soft parts covering the root of the nail; the uleer is of an unhealthy appearance, with thin, flabby edges, and covered with a dirty-yellow lymph; the skin is separated from the nail, which becomes exposed, to its very root, and discoloured. The ulceration extends beneath the nail, which becomes gradually detached from the parts beneath. The surrounding soft parts are swollen, of a dusky red or purplish hue, and intensely sore; bleeding profusely upon the slightest touch. When allowed to proceed, the toe or finger becomes a deformed, bulbous mass, and may continue for months; exhibiting not the slightest disposition to heal, so long as any portion of the nail remains at-

Paronyehia often occurs in perfectly healthy children, without any very apparent cause; in many cases it would appear to be intimately connected with derangement of the digestive and assimilative organs; but its most common cause is either external injury, puncture, contusions or slight wounds, cold, or the retention of any acrid

or extraneous substance about the nail.

During the inflammatory stage of paronychia, if any extraneous substance is present, it should be extracted, or removed by repeated ablutions with warm water and a sponge, according to its nature. In the superficial variety, the best application is, probably, the common bread-and-milk poultice, frequently repeated, with a brisk purgative internally, and a mild, restricted diet. In the cases in which the inflammation is more deeply seated, leeches, saline purgatives, low diet, and perfect rest are required. If the local inflammation is very considerable, and attended with much febrile reaction, in robust, plethoric children, a few ounces of blood should be taken from the arm, and some saline diaphoretic with antimony administered. The free application of leeches to the seat of the disease, is the most effectual means of abating the inflammation, and in this manner relieving the extreme pain. The early application of a blister around the affected finger or toe, has often arrested the progress of the disease. Various rubefacients have been recommended, as hot water, hot lev,

turpentine, &c., these will, when applied sufficiently early, often do good; we believe, however, that the blister should always be preferred. It is hardly necessary to say, that any derangement of the digestive organs that may be present, will require the appropriate remedies for its removal.

*R—Sulph. magnes. Jiv.
Pulv. nitri, Jj.
Tart. ant. gr. j.
Spir. æth. nitr. Jiv.
Aquæ, Jiv.—M.

Of which a teaspoonful may be given every three hours.

In sub-cuticular paronychia, when suppuration has commenced, it is to be promoted by frequent poultices, and when the cuticle is raised by the matter formed beneath, it should be freely divided, and then cautiously removed as far as it has become separated from the skin beneath. This is an important precaution, as suppuration is very apt to continue, if any portion of the detached cuticle is allowed to remain; and the disease thus travels around and over a considerable portion of the finger or toe. After the separation of the cuticle, the parts may be dressed with simple cerate, or the cerate of the oxyde

of zinc, and they, in general, heal very promptly.

In the more deeply seated forms of paronychia, when we find that we are unable to arrest the course of the disease, an early and free incision is all important. If we wait until suppuration has taken place, we not only prolong, unnecessarily, the patient's sufferings, but endanger the loss of motion at least, in the affected finger or toe, if not more serious injury. The incision should be made freely, and through the cellular texture of the part, down to the periosteum, and when the tendinous theca is affected, this should be freely divided with the knife. If the matter has burrowed beneath the nail, this should be scraped very thin, and then divided with a pointed bistuory. The incision gives almost immediate relief, allows the escape of whatever matter may have already formed, or if suppuration has not commenced, prevents it by arresting the inflammation. After the incision, the parts should be dressed with soft bread-and-milk poultices, until they heal.

If we have not been called to the case until deep-seated suppuration has taken place, and one, or perhaps several openings have been formed externally, through which fungus granulations extend and spread out in the form of mushrooms, free incisions are essential to the cure; if the tendons or thecæ be found dead or sloughing, the diseased portion should be clipped off with a scissors, with a small portion of that which is yet sound; if the bone be found in a state of caries, it should be extracted as soon as it becomes sufficiently loose. The best local application in these cases is a common bread-and-milk or carrot poultice. When the dead bone and tendons are removed, we have never seen much delay in the healing of the

parts.

Onychia maligna requires a somewhat different treatment. It is, according to our experience, one of the most frequent forms under which the disease presents itself in children, and unless properly managed, is apt to produce a troublesome, painful ulceration, which may continue, without the slightest appearance of amendment, for many months, and when finally healed, leave a very disagreeable deformity of the finger or toe, upon which a nail is seldom reproduced.

The child is to be placed upon a well regulated diet, composed chiefly of farinaceous articles and milk. It should be exposed to a pure, fresh atmosphere, and take daily exercise in the open air, adapted to its age and strength. Mild purgatives should be administered according to circumstances; and if the alimentary canal exhibit very considerable derangement, a mild, alterative course, with occasional

light tonics, and the warm or tepid bath every morning.

The local treatment consists of leeches, followed by emollient poultices. After ulceration has occurred, in some cases benefit will be derived from an ointment composed of the ungt. hydrarg. per oxyd. and sulphate of zinc^a; but, whenever the ulceration has extended beneath the nail and exposed its root, we have never seen any treatment in the least degree beneficial, until the whole of the nail is removed. This is certainly a very severe operation; but when skilfully and quickly performed, the suffering produced by it is infinitely less than that resulting from the long-continued painful ulceration kept up by the dead and partly detached nail. Upon the removal of the nail, the ointment just mentioned, or the black wash, or a weak solution of nitrate of silver, with a continuance of poultices, will quickly effect a cure.

^aR.—Ungt. hyd. peroxyd. 3j. Sulph. zinei. gr. xv. Cerat. simpl. 3j.—M. Or, R.-Sulph. zinci,
Chlorid. hydrarg. aa Əj.—M.

To be sprinkled thickly upon the diseased surface, and then covered with a pledgit of lint, wet with tineture of opium. (Perkins, Physick.)

The removal of the diseased matrix of the nail, by making a deep incision down to the bone, about three or four lines below the lower edge of the ulcer, and then carried around so as to dissect out entirely the diseased surface, has been recommended; we prefer the removal of the whole nail as more effectual, and even less painful. (Dupuytren, Rynd.)

FROM CONGENITAL CAUSES.

29.-Nævus.

Children are often born with spots or marks upon the skin, varying in extent, and very materially in their nature and importance. The whole of these have been generally included under the vague denomination of nævi materni.

A very common form of nævus is that of a mole or slightly elevated tumor, differing in size, in different cases, generally of a dark colour, and often covered thickly with fine, short, silky hair, of the same colour as the mole. These nævi may occur upon any part of the body, and when seated upon the face or neck, or upon the shoulder or breast in the female, produce very considerable deformity. They often increase slowly in size, and acquire a darker colour, until towards puberty; after which period, they commonly remain stationary for the remainder of life, and are unattended with pain or inconvenience. They are generally attributed to some alteration in the structure of the rete mucosum; their true nature does not appear, however, to be, as yet, well understood. It is not customary to interfere with them; they could certainly be dissected out, but the deformity resulting from this procedure, would probably be as great, as that it was intended to remove.

Another very common form of nævus is a dark red circumscribed stain, which generally appears upon one side of the face, and is sometimes of considerable extent. It is perfectly superficial, and has been supposed to result from a simple dilatation of the sub-cuticular capillary vessels of the part affected; it would appear to us, however, rather to depend upon a local abnormal condition of the rete mucosum. Like the former, it sometimes increases in extent, until about the period of puberty, when it undergoes no further change, throughout the remainder of life;—being attended with no other inconvenience than its unsightliness. We have known it, however, to disappear entirely during childhood. It has been proposed to diminish the deformity by tatooing with a white pigment. (Fränkel.)

The nævus appears frequently in the form of a slight dilatation of the capillaries; in some cases superficial, and in others extending deeply into the mucous membrane of the lips. In some instances the dilated capillaries appear like tortuous, wide-spread lines, proceeding from a small round spot, like the legs of the spider from its body; in others, they form small, defined, granular tumors, of a bright red colour; in other cases again, the nævus is composed of a congeries of venous capillaries, and is of a deep blue, or bluish red colour. These sometimes disappear before puberty; at others, they continue stationary, neither enlarging nor diminishing during life. They are never troublesome, constitute but a very inconsiderable deformity, and, as a general rule, should not be interfered with.

The most important of the nævi is that which appears in the form of a deep red-coloured, slightly elevated spot, which often rapidly augments in size, with a well defined margin, and a granular surface; it is obliterated by pressure, but rapidly rises again when this is removed. It is formed of an erectile, vascular tissue, and if accidentally wounded, often gives rise to copious, prolonged, and dangerous hæmorrhage. When seated near to an arterial trunk of any size, it pulsates powerfully beneath the finger, and is attended

by a thrilling pur, synchronous with the action of the heart. (Aneu-

rism by anastomosis.)

Various plans have been proposed for the removal of the vascular nævus. 1st. The application of cold and pressure. (Abernethy.) This will frequently succeed when the nævus is small, and not disposed to increase rapidly in size, and when it is seated over a bone; but in those of larger size, of rapid growth, and seated over soft parts, it is altogether inefficient. 2nd. Vaccination over the surface of the (Hodgson.) This will frequently succeed; it is always, however, productive of a considerable scar, and if ulceration or sloughing occur, as is sometimes the case, the scar is often large, and a very decided deformity occurs in parts exposed to view. 3rd. Caustic. (Wardrop.) This will also repeatedly succeed when the vascular tumor is of small size, and inactive. A portion of adhesive plaster, with an orifice in its centre, of less diameter than that of the nævus, should be applied closely around the tumor. The kali purum is then to be rubbed upon the surface of the nævus, until slight discolouration takes place; the whole is then to be covered with adhesive plaster, and suffered to remain some days. When the tumor is flat, one of its largest vessels may be punctured, and a stick of the caustic, finely pointed, passed into the orifice, vinegar being immediately applied, to prevent the too extensive action of the caustic. The caustic will not succeed in the removal of large, diffused, or deeply scated nevæi; it cannot be applied in those scated in the immediate vicinity of the eye, and however carefully performed, is productive of an unsightly scar. 4th. Ligature. (Bell, White, Lawrence.) There are several modes of applying the ligature. When the base of the tumor is very narrow, the simple ligature may succeed; but when the base is large, a needle armed with a double ligature, may be passed beneath the tumor, and one portion tied around each hemisphere, and tightened, as it becomes loosened by ulceration; or, two double ligatures may be passed beneath the tumor, one in the direction of each of the diameters, and the tumor strangulated at four different points, by tying together the single ends of the ligatures nearest to each other; or a hare-lip pin may be passed under the nævus, and then a double ligature under that at right angles; the separate ligatures are then to be tied lightly, and twisted round the pin twice or thrice. In both of the latter methods, it is as well to divide freely the substance of the nævus above the ligatures. We have seen the ligature often perfectly successful; it is always, however, attended with considerable pain, and cases are recorded in which it was productive of convulsions. It is always tedious, and leaves, generally, a large, irregular scar. 5th. Setons. (Adams.) Twelve or fourteen threads passed through the tumor at different points without tying. This is said to succeed perfectly in the removal of the nævus. 6th. Ligature of the principal arterial trunk which supplies the nævus. (Travers.) will unquestionably succeed in some cases, and in the more extensive and distinctly marked aneurism by anastomosis, is, in fact, the only operation that can be depended on; it is, however, a very serious one, and has been found repeatedly unsuccessful; and in the ordinary forms of vascular nævi, it is unnecessary to resort to it. 7th. A plan of treatment has been suggested, which is said effectually to remove these tumors, to be applicable in all cases, without reference to size or locality, to be without danger of hæmorrhage, and to be unattended with the inconvenience of ulceration or sloughing, and consequent deformity. (M. Hall.) It consists in passing a moderate sized needle, with cutting edges, through the nævus so frequently, as to induce adhesive inflammation with the deposit of lymph, and thus to obliterate and consolidate the vessels of which it is composed, yet so seldom as not to incur the risk of inducing sloughing. The needle must be passed in several directions from one point in the circumference of the nævus, to several points more or less opposite; near the surface in the superficial arterial nævus, but more deeply in the deeper-seated capillary nevus. The operation is to be repeated at intervals of two, three, or four months, according to the state of the case, and the progress of the cure. We know nothing, personally, of the merits of this operation, never having seen it performed. 8th. Excision. (Bell.) This is the plan which we have invariably adopted in all true arterial nævi that have fallen under our notice, and have repeatedly seen it performed by others. It is said to be frequently dangerous, from hæmorrhage, and to have even proved fatal. (Wardrop.) We have never seen any injury result from it. The incision through the skin should be made at some distance from the margin of the tumor, which should be dissected out beneath its base; but little hæmorrhage has resulted in the majority of cases, and this was readily commanded by pressure; occasionally one or two small arterial branches had to be secured by ligature. By approximating and securing the edges of the wound, a very small cicatrix is produced.

Whatever operation is adopted, it is important that the child should have attained its third year previous to its performance, and at the same time, be in tolerable health, and free from fever, or other positive disease. If considerable pain, restlessness, or fever result from the operation, these should be treated by their appropriate remedies.

SECTION V.

DISEASES OF THE NUTRITIVE FUNCTION.

SCROPHULA.

Scrophula is a very common affection of infancy and childhood, being itself often the cause of various morbid phenomena; more frequently, however, acting as a predisposing cause of disease, or giving to the other affections, common to the earlier stages of life, a peculiar character, as well in reference to their symptoms, as to their pro-

gress and termination.

It is very difficult to give a correct, and at the same time, concise and comprehensive definition of scrophula, and hence the somewhat vague term scrophulous, or strumous diathesis, has been very generally adopted by physicians; the various manifestations of this morbid condition being described as individual diseases. This plan, while it is productive of no little confusion, is but illy calculated to lead to correct views in regard either to the pathology, prophylaxis, or therapeutical management of the scrophulous affections. Scrophula is unquestionably dependent upon an abnormal condition of the organic functions, in consequence of which there is imperfect sanguification and a defective organization of several tissues. There is a deficiency of fibrine in the blood; (Clark, Andral;) there is a predominance of the white fluids and tissues over the red; the several organs are pale, small in size, loose in texture, and perform languidly their respective functions. There is a peculiar fragility of the whole frame; the skin is usually thin and delicate, and by allowing the vessels beneath to be more distinctly seen than usual, often gives to the complexion an appearance of great delicacy and beauty. The limbs are small, soft, and rounded, but with large joints; the fingers are long and slender, but often broad and flat at the extremities. The chest is contracted; the head usually large, and the hair fine, silky, and often light coloured; the eye-lashes long, the eye prominent, though languid in expression, and the pupil large; the lips are usually thick and prominent. The whole frame exhibits an appearance of languor and debility; exercise of every kind quickly tires. The action of the heart, though usually languid and feeble, is easily excited, and a degree of febrile excitement will be apt to result from the slightest

causes. The feelings are quick, warm, and ardent; and often there is a very decided quickness and precocity of intellect. The countenance is, however, not unfrequently, swollen, and of a sallow hue; the cheeks full, tumid, and flaccid; the hair coarse, and dark coloured; the lips thick, coarse, and liable to chap; the skin thick, harsh, and liable to eruptions; the eyes dull and watery; the eyelids full and drooping, and the general expression dull, heavy, and stupid. Digestion is slow and imperfect, and liable to frequent derangement. bowels are torpid or irregular; cold and heat are alike borne with difficulty; and the effects of any of the usual morbific causes are more certain to be experienced by an organization such as we have described, than by one of greater health and vigour; evinced, however, in the production rather of chronic than of acute disease. Inflammations occurring in scrophulous habits, are slow in their progress, and often unattended by very manifest symptoms, unless when they are externally seated. When adhesions occur, the adhesive matter, instead of being firm, is of a curd-like consistence and appearance, very soft, and easily broken, and with few, if any, blood-vessels penetrating it. Suppuration is attended with the formation, instead of genuine pus, of a thin, puruloid fluid, containing curd-like matter. Ulceration is slow in its progress, granulations are tedious in forming and unequal; and cicatrization, which is very tardy in taking place, leaves an uneven, deep, and unsightly (Cooper.) Softening of the internal tissues is very common, as well as tumefaction, suppuration or disorganization of the lymphatic glands:—throughout almost every tissue of the body there is a tendency to tuberculous depositions, varying somewhat in their character, progress and terminations, according to the different tissues in which they occur; whilst in the bony structure we have a disposition to softening from a defect of the ossific process, and in the skin a predisposition to various chronic eruptions.

With this particular organization, or with a somewhat less decided lymphatic temperament, children are often born into the world, and very early exhibit its influence, in their greater proneness to disease, or in the modified phenomena of the ordinary maladies of infancy; particularly when placed under influences, calculated still further to impede the functions of digestion, assimilation, and sanguification; whilst, under opposite circumstances, or by a judicious course of hygienic treatment, the organic functions may be roused into greater activity, and the organization of the tissues so far improved, as to destroy their tendency to disease, or to allow the individual to pass through life, with a delicate constitution, but without the occurrence of any morbid phenomena calculated to produce suffering, or mate-

rially to impair his comfort.

The question has been long discussed as to the hereditary character of scrophula. Upon a cautious review of all the facts that have been adduced, and a reference to the professional experience of every observing physician, it is a question which appears to us very easy of solution.

There cannot be a doubt, that the children of parents who have laboured under the disease, are more peculiarly liable to its occurrence, all other things being the same, than those born of individuals who were free from it. In the fætus in utero, scrophulous affections have not unfrequently been developed, when one or other of the parents have been diseased; but, ordinarily all that the child inherits is the particular organism, which predisposes it subsequently to birth to affections of this character. And this temperament or predisposition may be derived not only from scrophulous parents, but from such as have never manifested, during their whole lives, a trace of the disease. Thus, the predisposition in the child may result from a morbid condition of the parents, produced either by disordered digestion, chronic disease, intemperance of various kinds, a luxurious and indolent life, too late or premature marriage, and the indulgence of any of the depressing passions. Close intermarriages between blood relations have probably, also, a very powerful tendency to produce a predisposition to scrophula, in the offspring. (Carmichael.)

While children born with the organization, and consequent predisposition just alluded to, will, under all circumstances, be most liable to the occurrence of scrophulous disease, it is, nevertheless, true, that the scrophulous tendency may be developed subsequent to birth, even in children exhibiting no traces of a lymphatic temperament, and born

of perfectly healthy parents.

The causes which produce this development, are various; the most important are improper or deficient food—impure and confined air—defect of exercise—cold and dampness—imperfect clothing—defect of personal cleanliness—over fatigue—and the depressing passions

generally.

Improper or deficient food is supposed to be of itself sufficient to produce that particular condition of the organic functions, upon which we believe the development of scrophulous disease to depend. The origin of scrophula, in disorder of the digestive organs, is of so frequent occurrence, that many pathologists have considered this to be its invariable cause. (Carmichael, Todd, Clark.) Both improper and deficient food give rise to imperfect digestion, defective assimilation, and incomplete sanguification; the blood becomes deficient in fibrine, and the nutrition of all the tissues suffers. The child becomes pale, loses flesh, its strength sinks, and a general unhealthy condition of the whole organism quickly ensues. Now, all this may occur to the infant, at the breast, from the bad quality or insufficient quantity of the mother's milk. It is more likely, however, to take place, when the deficiency is attempted to be supplied, by rearing the child, partially or entirely, by the hand, and still more so, after weaning, by the insufficient amount, indigestibility, or unnutritious properties of the diet, upon which it is attempted to be nourished. Poverty may prevent a greater quantity, or a better quality of food being allowed, and, in such cases, other causes very generally concur to undermine the health and vigour of the constitution. But, even in families where

food is plenty, "children are often starved into disease," (Fittzler,) by that which is given to them being altogether unadapted to the condition of their digestive organs, and in consequence, not undergoing, to a sufficient extent, those changes which are essential to afford an adequate supply of materials fitted for nutrition. A robust, healthy child, in the enjoyment of pure air, and active exercise, may often, for a considerable time, exhibit, in no very striking degree, the bad effects of an improper diet; but even such a one must eventually suffer under it; whilst the feeble and delicate child, or one exposed to the influence of an impure and confined atmosphere and inactivity, will quickly evince all the phenomena of defective nutrition; we do not mean to say, that, in every instance, scrophula will be developed; but only that this is one of the causes which invariably concur in its

development. In the predisposed, it is often the chief cause.

Impure and confined air is even more efficient in the production of scrophulous disease than a defective diet, in children liable to its influence. (Baudelocque, Alison.) It acts not only in preventing the due oxygenation of the blood by the lungs; but, also, the important changes which are effected in it by the functions of the skin. Children confined in ill-ventilated apartments, particularly when the air of such apartments is still further vitiated by the numbers who breathe it, or the neglect of cleanliness, are uniformly pale, delicate, and unhealthy; and if, at the same time, the apartments are badly lighted, the baneful influence exerted upon the health of its inmates, is still more manifest. The effect which the solar rays exercise upon the atmosphere, or upon the functions of life, it is perhaps impossible to discover; all we know is, that they are, in some manner, essential to the wholesomeness of the first, and the due performance of the From the many causes by which, in large and crowded cities, the purity of the atmosphere is impaired, and its free circulation impeded, the children who are brought up in them, have invariably paler complexions, and very generally smaller muscles, less developed forms, and a far inferior degree of vigour than those reared in open, healthy situations, in the country; and when the deleterious tendency of the city air is not fully counteracted by wholesome food, regular, active exercise out of doors, and personal and domestic cleanliness, a scrophulous tendency is very apt to be generated; while the child, in the country, who spends his time in the fields, in labour, or in active sports, will remain comparatively robust and healthy, even when little attention is paid to his diet, or strict personal cleanliness.

Defective exercise is to be ranked, next to impure and confined air, as a cause of that defect of nutrition, upon which the tendency to scrophulous disease depends; its effects are very generally increased by its being combined with those of an impure and confined atmosphere. It is chiefly by these two causes that the health of those children is so quickly impaired, who are confined for many hours, daily, in crowded school rooms, or are made to toil from morning until night, and often late in the night, in sedentary occupations, or in the cotton and other factories of Europe. Nutrition in children so circumstanced.

is quickly and deeply impaired, whatever may be the nature and quantity of their food, by defective digestion, by imperfect assimilation, by deficient oxygenation of the blood, and by a too languid circulation through the capillaries. In this country, female children suffer more from this cause of ill health than boys; the latter, even in our schools and factories, are allowed ample time for out-door exercise, while custom, which prescribes sedentary occupations to the latter, unfortunately forbids, even in the exercises of the former, all that activity and exposure to the open air, which their occupations render even more essential to them than to their brothers. Hence, probably arises the greater frequency of scrophulous affections in females, than in males.

Cold and damp are invariably injurious to the infant; in the predisposed, they are among the most powerful exciting causes of scrophula, and even in the healthy, when long-continued, they impair, to a very considerable degree, the nutrition of their bodies; and this, too, when in a degree far less that is necessary to produce a sensation of chilliness in the adult. In the damp and chilly hovels of the poor, during the colder season of the year, the children seldom escape more or less suffering and disease, and if death is not the speedy consequence, the health and energy of their system are impaired, and some form of scrophula being developed, they ultimately become its victims. But it is not among the poor only, that cold and damp exert their morbific influence, even the children of the more opulent are made to suffer from them, in consequence of fashion, rather than good sense dictating the form and material of their clothing, and leaving entirely bare or only flimsily covered, portions of the body that require at least equally with the others to be kept warm. The effects of the cold to which the child is thus exposed, are not more certain, because produced, often slowly and insidiously.

Cleanliness in children is an important safeguard to health; its neglect is frequently one of the causes of the impaired nutrition, which lays the foundation of scrophula. But it is not merely the hands, and face, and neck, that are to be kept free from extraneous filth; the whole surface requires to be preserved from an accumulation of its own exerctions, which can only be effected by the daily use of the warm or tepid bath, and a frequent change of clothing. "The skin should be considered, to a certain extent, as an organ whose function is supplementary to that of the lungs; how can the healthy condition of the blood, then, fail to suffer, and nutrition be imperfectly performed, when its exhalent pores are clogged with impurities." (Bockholtz.) Conjointly with foul and stagnant air, a bad diet, and deficient exercise, personal uncleanliness is a powerful cause of that state of impaired health in children, which lays the foundation for

scrophulous disease.

Children are, we suspect, but seldom subject to over fatigue, in this country, from laborious occupations. In Europe, they are frequently, however, exhausted by being kept steadily upon their feet, for many hours, day and night, at occupations, which without being labourious,

fatigue as well by their monotony, as by the constant attention they demand. In some of our newspaper offices, we have known the health of the boys who wait upon the press, often during the entire night, to become seriously impaired; and in certain of our schools where young children are kept seated at their forms, engaged in uninteresting tasks, for many hours of the day, a degree of fatigue is induced very serious often, in its results. Fatigue in children impairs the energies of the system, increases the irritability of all the organs, and concurs in the

production of the scrophulous predisposition.

The depressing passions, happily, are not easily excited in children, and yet they are more frequently a cause of impaired health, at this period of life, than is generally supposed. Neglect or ill usage, on the part of parents, ridicule for personal defects, constant thwarting of their childish but natural inclinations; the rude repulsing of their affections, and a variety of other errors and improprieties, in their moral education, will often, in children of peculiarly susceptible minds, produce a state of such deep depression as sensibly to impair their healths, and with the seclusion and inactivity to which such depression leads, lay the foundation for disease, which will be very liable to assume the scrophulous character.

In the predisposed, almost any one of the causes enumerated will be sufficient to produce some one or other of the forms of scrophula, while in those born with the marks of health, the combined action of several

of them may produce the predisposition to its occurrence.

Scrophula, therefore, we would define to be, that peculiar modification in the phenomena, course, and termination of any of the ordinary diseases, with an increased predisposition to the occurrence of these, resulting from a defective condition, or diminished energy of the organic functions of the system, whereby the constitution of the blood is impaired, and nutrition rendered imperfect, so that the red blood and tissues are diminished, and the white fluids and tissues allowed to

predominate.

Children who possess, from their birth, even a very strongly marked lymphatic temperament, and in whom the predisposition to scrophulous affections is consequently congenital, by a proper course of hygienic treatment, may be preserved from the attack of disease, and have their health and vigour greatly improved; without, however, such a course is early commenced, and perseveringly carried out, they will be constantly liable to a variety of ailments, until some confirmed and serious malady is, finally, developed. Their digestion becomes, from slight and often inappreciable causes, frequently deranged; their appetite is often excessive, though, in numerous instances, deficient or irregular; their bowels are often confined, their discharges unhealthy in colour and consistence, or a torpid condition of the intestines will alternate, at irregular intervals, with diarrhæa, the stools being light-coloured and slimy or dark, and of a jellylike consistence. The flesh becomes soft and flabby, and the bones indisposed to perfect ossification. The child is late in assuming the

erect position, or in attempting to walk, or if put upon his feet, the bones of the lower extremities become curved and distorted. The joints are large and prominent, but loose and infirm. Dentition is protracted, slow, and difficult, and the teeth soon become black and decayed. The child is often fretful and peevish, has a languid, heavy appearance, is indisposed to play, and soon becomes fatigued. His sleep is often disturbed, and broken by signs of distress or startings, as if from fright. The functions of the skin are imperfectly performed, and frequently, cruptions of a transient or permanent duration occur. The tongue is either soft, flabby, and repeatedly covered with a thick tenacious mucus, or uniformly red, or maculated.

Very generally, the child exhibits early symptoms of intelligence,

but is often dull, heavy, and stupid.

As the child advances in years, the throat, fauces, and tonsils exhibit symptoms of disease. The latter, especially from slight attacks of cold, become greatly swollen, and of a ragged, uneven shape, and often remain permanently enlarged for a considerable length of time, though seldom very painful; the only inconvenience resulting from the enlargement being an impediment to the freedom of respiration, particularly when the child is asleep, some slight difficulty in swallowing, and a peculiar intonation of the voice in speaking. The eye is often the seat of slow inflammation; the edges of the eye-lids are affected with chronic disease, increased exudation from the follicles, stye, &c. The glands of the neck become enlarged, and, after remaining long, in an indolent state, frequently inflame, suppurate, and give rise to ulcerations, slow in healing, and which often leave fistulous openings, from which a thin discharge takes place, for many months, or even years.

The term scrophula has generally been restricted to a chronic enlargement of the lymphatic glands, terminating finally in their inflammation, and a species of imperfect suppuration, forming abscesses filled with a pale whey-like fluid, which gradually becomes thicker, of a yellowish colour, and intermixed with portions of curd-like matter. When the abscess is opened or ruptures, it gives rise to an irregular, ragged ulcer, in which large, spongy granulations slowly form, of different heights at the different parts of the ulcerated surface; cicatrization, finally, takes place, and an uneven, puckered, and often deep,

indelible scar is left.

The swelling of the lymphatic glands may be detected, when they are no larger than a pea. They are then, hard, moveable, without pain or even tenderness, when touched or handled. They often continue, for a great length of time, without increase, forming a chain of small tumors, extending from ear to ear. Occasionally, one of the salivary glands, or the thyroid body becomes affected. When the glands commence to augment in size, the progress of the swelling is, generally, extremely slow, and often months or years elapse, before the skin over the tumors inflames. Occasionally, the swelling subsides, before this takes place; but, in general, it has a tendency to soften, forming a species of

encysted tumor filled with a whey-like or curdy fluid. Even, at this stage, absorption will sometimes take place, and the swelling disappear. Usually, however, suppuration proceeds slowly; the whole structure of the diseased gland becomes destroyed, and a large abscess is formed, that finally bursts, forming an ulcer, varying in size, with indurated edges, and uneven surface, from which is discharged a thin watery fluid mixed with flakes of curdy matter, and occasionally

small masses of a tuberculous appearance.

In other cases, the diseased gland is less uniformly softened, and becomes converted into a curd-like substance, intermixed with a softer, less opaque matter, of a light-yellow colour, with a small collection of pus near its centre. Sometimes, a number of small abscesses occur in the body of the diseased gland, each filled with curdy matter. The gland finally becomes a large abscess. Inflammation subsequently attacks the tissues surrounding the gland; which latter is eventually entirely destroyed by suppuration;—suppuration sometimes taking place, around the new-formed matter within the gland. The gland may continue, however, for a number of years in a diseased state, without suppuration taking place. (Heberden.)

The scrophulous ulcer is always slow and difficult to heal; it may often remain open for months; or it may heal in one part and extend in another. When cicatrization does take place, it is irregular, puckered, often crossed by projecting bands, and of a peculiar white,

unhealthy colour.

The intumescence, of the glands are frequently the effect of exposure to cold, or occur in conjunction with more or less disease of the digestive organs. They are sometimes connected with cutaneous eruptions about the head and face; but occasionally come on without any very evident exciting cause. It is generally confined to the glands about the neck, though the lymphatic glands of the axilla and groin may become diseased in the same manner;—we have seen well marked scrophulous disease of the axillary glands, but have never met with a case in which those of the groin were affected.

Scrophulous affections of the glands of the neck most commonly occur after the fourth year; they may occur, however, much earlier; we have seen them previously to the first year, and repeatedly between the second and fourth. They seldom, however, tend to suppuration in children under two years of age. When the disease occurs in this form, unconnected with any serious affection of the internal organs; though tedious and troublesome, and often resulting in very considerable deformity, it is seldom, if ever, fatal. It has even been proposed, in cases in which a tendency to tuberculous depositions in the lungs presented itself, to overcome this by exciting disease in one of the glands of the neck, by the insertion of vaccine matter in numerous points over the gland; and instances are related, of the presumed successful result of this procedure. (Parrish.)

Scrophulous opthalmia. Inflammation of the eye is a very common affection in children of a strongly marked lymphatic tem-

perament; (Mackenzie;) and is often the first indication which presents itself, of the scrophulous predisposition. Very generally, the edges of the eyelids are first affected with a degree of soreness, and soon become red and slightly thickened; the secretion from their follicles is increased, and drying during sleep, causes the lids to become agglutinated. Upon everting the eyelids, their inner surface is found to be somewhat reddened, and a few red vessels are observed upon the globe of the eye. The redness of the conjunctiva is at first slight, and, in many cases, confined entirely to the lids. There is generally, however, an abundant secretion of the tears, and very great intolerance of light; the patient cannot be persuaded to raise his eyes to the light, but walks with the face inclined downwards, and often shades the eyes with the hands. This intolerance of light is usually most severe in the early part of the day; in the afternoon it may so far remit as to permit the patient to open his eyes. The presence of daylight would appear to produce a spasmodic action of the orbicularis muscles, so that even when the child is willing, he is unable to unclose the eyelids during daylight; or, if he does succeed, by a kind of convulsive effort, the cornea is immediately rolled upward beneath the margin of the tarsus, so as to be completely hid from view. (Taylor.) As the disease augments, the redness of the conjunctiva increases in extent and intensity. In the commencement, the disease is not attended with much pain; though, occasionally, severe pain is experienced during the night, by which sleep is often broken or prevented. In some cases, the vessels running from the conjunctiva to the cornea are somewhat injected, whilst in other cases, several large vessels are perceived. The redness of the conjunctiva of the eye itself is, however, not usually very strongly marked; in recent and acute cases, an effusion of serum sometimes occurs beneath the conjunctiva immediately around the cornea, forming an elevated ædematous circle of a peculiar reddish brown appearance, and about a line or more in thickness. (Jeffrys.)

There is a strong disposition to the formation of pustules, which appear upon many points of the lids, and along the edge of the tarsus and often produce ulcerations, attended with considerable irritation. The skin immediately beneath the eye, is very commonly inflamed and

covered with a minute pustular eruption.

In the majority of cases, minute vesicles or pustules appear upon the conjunctiva and cornea. They vary in number and size, but are generally smaller upon the cornea; at the same time a pencil of red vessels is often developed on the latter. The vesicles or pustules, upon rupturing, form small, round, superficial or funnel-shaped ulcers. The vesicles or pustules may be absorbed previously to bursting, and then they leave, in the cornea, a slight degree of cloudiness, which disappears in time. Sometimes, upon its removal, a transparent dimple remains, which is long in filling up. In some cases, the cloudiness spreads over the cornea; large, red vessels run into it, forming a vascular speck, which is always a very tedious and troublesome

symptom. (Mackenzie.) Occasionally, a general cloudiness or permanent opacity of the cornea may also be produced. The ulceration of the cornea sometimes presents an appearance, as if a small portion of its conjunctival layer had been removed by a sharp chisel, leaving a distinct facet, sometimes level, and in other instances concave:—this condition may remain unaltered for a considerable length of time, and is unattended with opacity of the cornea. (Maunsell.) We have met with this form of ulceration in many cases. The ulcers, particularly when superficial, often cicatrize, leaving an opaque, permanent cicatrix, which may become lessened in time, but never entirely When the ulcerations are of some depth, they are often attended with considerable irritation and pain, upon every motion of the eyelids. They sometimes penetrate entirely through the cornea, and a protrusion of the membrane of the aqueous humour takes place, in the form of a small vesicle;—when this gives way, the aqueous humour escapes, the iris is prolapsed, and a dense, opaque cicatrix is the result: or, the ulcer may, at once, penetrate the anterior chamber, with a similar result.

When the ulceration of the cornea is of considerable size, and the iris extensively prolapsed, the pseudo-cornea, which forms over the protruded portion of the iris, sometimes gives way before the pressure of the humours, forming a partial staphyloma. A general protrusion of the whole cornea may take place from the same cause, when its texture has become weakened by inflammation, and the iris is adherent to its posterior surface. The transparency of the cornea may also be impaired by a ramification of red vessels, forming a vascular net-work,

in its conjunctival layer. (Taylor.)

The inflammation may be propagated from the cornea to the sclerotica and iris, or even to the more deep-seated structures of the eye, producing extensive disorganization of the interior of the globe, particularly when the disease is of long standing, or has repeatedly recurred. Hydropthalmia may be induced by increased secretion of the humours: or, occasionally, the eye may become atrophied, apparently from interrupted nutrition.

Scrophulous iritis is generally of a chronic form, and unattended with symptoms of any severity; it may, in the course of time extend, and cause disorganization of the surrounding tissues, terminating in

amaurosis and atrophy of the globe.

Scrophulous opthalmia occasionally assumes a much milder form. Its principal feature is the occurrence of pustules upon the conjunctiva, usually a line or two from the margin of the cornea. (Pustular opthalmia.) The pustules are generally of considerable size, and filled with an opaque, yellow matter: they are accompanied with a fasicular injection of the conjunctiva in their immediate vicinity. Occasionally, the injection of the conjunctiva is more diffused, and accompanied with ecchymosis. On the pustules bursting, they form broad, elevated ulcers, which, after a time, cicatrize. There is little or no intolerance of light, and an entire absence of the spasmodic contraction of

the lids observed in the ordinary form of scrophulous opthalmia; and the transparent textures of the eye are unaffected. It is often combined with catarrhal conjunctivitis. (Mackenzie.) This form of opthalmia, is, according to our experience, of much more common occur-

rence, than the more violent one described above.

The local disease is generally attended with some degree of febrile reaction—a fretful and irritable temper, and a disordered condition of the alimentary canal. Frequently, the abdomen is tumid and tense, the breath very offensive, and the alvine discharges of an unnatural appearance. When the case is one of long continuance, there is considerable emaciation, particularly of the extremities, and there is a general manifestation of feebleness and irritability.

Scrophulous opthalmia is frequently preceded by eruptive affections of the head and face, and ulcerations behind the ears, which disappear soon after the inflammation of the eye is fully developed. When associated with these eruptive affections, the disease has been described as exanthematous, or porriginous opthalmia. (Wardrop, Christian.)

Scrophulous opthalmia usually attacks both eyes, though seldom in an equal degree; or the disease may occur, first in one eye, and then

extend to the other; or, it may attack the eyes alternately.

The disease most generally occurs during childhood, rarely in adults, and never, unless they have previously suffered from it. The most common period for its attack is between the first and fourteenth years of life.

It is produced by the usual causes of opthalmia—cold, irritating vapours, or other substances admitted into the eye. It frequently occurs about the period of dentition, or subsequently to an attack of one or

other of the febrile exanthemata.

Inflammation of the ear. Scrophulous otitis. This is a very common affection during childhood. The lining membrane of the external meatus, may be the seat of inflammation, of a chronic character, attended by pustulation; upon the rupture of the pustules, ulcers form, and give discharge to a thin, unhealthy, and often very fætid pus. The disease may cause a destruction of the membrana tympani, and of the osicula of the ear, and thus occasion permanent deafness. The discharge from the ear is often continued for a great length of time, and a thick, spongy, very irritable condition of the lining membrane of the meatus, which appears covered with a kind of curdy exudation, is of very frequent occurrence; or, in other cases, the discharge ceases, for a longer or shorter period, and then again suddenly recurs. Sometimes the suppression of the discharge is followed by scrophulous opthalmia, porriginous eruptions upon the scalp, intumescence of the glands of the neck, &c.

In other cases, the inflammation affects the deep-scated structure of the ear; or this may become affected by the extension of the disease from the external meatus. This form of the disease is attended with more or less dull pain, which often extends over the side of the head, alternating, occasionally, with very severe paroxysms of more acute

suffering; with deafness, singing, humming, or other noises in the ear; disturbed sleep, fretfulness and irritability of temper, and, occasionally, with some degree of febrile reaction. When a discharge takes place, it is of a thin, greyish, dirty coloured fluid, often more or less sanguinolent, and exhaling a peculiar, but, generally, very fætid odour. It is often acrid, and causes irritation, and more or less swelling of the lobe of the ear, and such parts of the skin as it comes in contact with. Mixed with this discharge, in the progress of the disease, are observed small fragments of carious bone. The mastoid cells are very often affected; in this case, a dull pain is felt over the mastoid process, which is tender upon pressure;—the skin covering this part, becomes reddened, slightly swollen, and an accumulation of matter takes place beneath it. After a time, the skin assumes a more dusky, or violet hue, becomes gradually more and more thin, and, finally, ulcerates, giving discharge to a fluid, similar to that from the ear. The cellular structure of the mastoid process, is found to be destroyed, to a greater or less extent, and infiltrated with matter, while a fistulous communication is formed between the external surface, and the cavity of the tympanum. Occasionally the matter travels downwards, between the muscles attached to the mastoid process, and opens low down in the neck. In other cases, the whole cellular structure of the mastoid process, becomes disorganized and broken down, and is discharged from the external meatus, mixed with a sanious fluid, and the mastoid projection disappears, without the skin becoming affected. (Lallemand, Bennett.) In other cases, again, the pus and disorganised matter of the cells, find their way from the mastoid process through the Eustachian tube;—the arrival of the matter in the fauces being attended with coughing, and its expectoration, with a nauseous, disgusting taste, loss of appetite, and occasionally vomiting. In some cases, the mastoid process is enlarged, and converted into a soft homogeneous mass, readily cut, like cheese, with the knife. (Krukenberg.)

The petrous portion of the temporal bone is occasionally affected. In some instances, the facial nerve is involved in the disease; when acute pains in the ears are experienced, with spasmodic contractions of the muscles of the face, of the side affected, terminating, finally, in paralysis. Several cases of this kind are on record; (Lallemand, Berard, Wolff;) and we have one now under our care, in which, besides paralysis of the muscles of the left side of the face, there is a loss of the power of articulating. In this case, which is in a boy seven years of age, the otitis occurred subsequent to a very severe attack of scarlet lever. In many instances, the disease of the petrous portion of the temporal bone, involves the brain, and various symptoms of cerebral disease are produced. (Itard, Lallemand, Krukenberg,

Abercrombie, Brodie, Wolff, Pilcher, O'Brien.)

One or two cases are referred to by Lallemand, in which the disease extended to the occipital bone and involved the first two cervical

vertebræ. Caries of the bones, at the basis of the cranium has like-

wise been observed. (Krukenberg.)

Scrophulous otitis is, most generally, a disease of childhood; it commonly affects but one ear, though we have seen a few cases in which it occurred simultaneously in both. It may be produced by any of the ordinary causes of inflammation. It is frequently observed about the period of dentition; and, in a large number of instances, subsequent to attacks of one or other of the acute exanthemata. The disease is frequently preceded by ulcerations behind the ears, crysipelas of the face, porriginous cruptions about the head and face, and, as these frequently disappear when the inflammation of the ear takes place, it has been generally attributed to their being suddenly dried up or repelled—in many instances, however, with very little foundation. (Krukenberg.)

Scrophulous offits is frequently accompanied by more or less febrile reaction, and by the same disordered condition of the alimen-

tary canal, noticed when treating of scrophulous opthalmia.

Scrophulous discharges from the vagina. These not unfrequently take place in female children, even at an early period of infancy, and, occasionally, about the fifth year. (Dewees.) They result from a sub-acute inflammation of the mucous membrane within the labia. and are, in many cases, attended with apthous nlceration. The matter discharged, is various in its character, being often a thin sanious fluid, with small floceuli, of a curdy appearance, at others the discharge is of a thicker, more opaque, somewhat purulent appearance, and is often so acrid as to produce redness and irritation, and a slight pustular cruption of those portions of the skin with which it comes in contact. The discharge is sometimes very slight, at others more considerable. This affection has been repeatedly mistaken for gonorrhæa, communicated by infection from the parents; or, in older children, for the disease, when neglected, may continue up to puberty, (Dewees.) it may give rise to suspicions of a very grave character, which the physician is occasionally called upon, by his professional opinion, to remove. The true nature of the disease is, in most cases, rendered evident, by the patient labouring, at the same time, under other symptoms, of a decidedly scrophulous character, or those which indicate a very strong predisposition to such affections. A very striking case is related by Dr. Marshall Hall, which shows the importance, in a medico-legal point of view, of a correct knowledge of the character of this affection. (Med. Chirur. Trans. v. 7, p. 94. Ferriar.)

This, it is to be recollected, is a very different disease from that described by *Boivin*, *Dugès*, *Kinderwood*, *Mackintosh*, and others, as affecting the labia of female children, and terminating in gangrene, though confounded with it by a late very excellent writer. (*Church-*

hill.)

Tabes mesenterica. Scrophulous disease of the mesenteric glands. The glands of the mesentery are said to be, after those of the neck, the most common seat of scrophulous disease. From the frequency

with which, in those predisposed to scrophula, sub-acute, or chronic inflammation of the alimentary mucous membrane occurs, there can be no doubt that disease of the mesenteric glands, is one of the most common indications of such predisposition. The error committed by most pathologists, until a very late period, has been, in attributing to the diseased condition of these glands, the entire chain of symptoms by which it is preceded and accompanied; when, it is probably, in

every instance, the effect of gastro-intestinal irritation.

The most common characteristic of this form of scrophulous disease is, prominence of the abdomen, with emaciation, particularly of the limbs. Its only certain diagnostic, however, is the perception of the enlarged glands, by manual examination, through the parieties of the abdomen. It may, however, be suspected, whenever chronic disease of the alimentary canal, occurs in children of a strongly marked lymphatic temperament, especially if such disease becomes attended in its course, with fulness and irregular hardness of the abdomen. The glands exhibit, in the various stages of the disease, nearly the same changes that occur in scrophulous glands of other parts; in some cases, being simply increased in size and density, in others, enlarged, reddened, and softer than natural; while in others, again, their texture is changed, and they become filled with a soft, white, curdy matter, sometimes mixed with a purulent fluid. When the disease is protracted, the patient generally dies in a state of complete marasmus; and, not unfrequently, tuberculous depositions are found in the lungs and other organs.

Scrophulous disease of the bones. In that condition of the system, during childhood, which predisposes to the occurrence of scrophulous affections, the bones are always slow in attaining that firmness of ossification, which is necessary to fit them for their respective offices. There is a deficiency of the phosphate of lime, throughout the entire osscous system;—the result, it has been presumed, of a want of energy in the circulation. (Cooper.) This may concur, to a certain extent, in producing the retardation of the ossific process; its true cause, however, is to be sought for in some deficiency in the healthy constitution of the blood, and in an abnormal state of the nutritive process generally. The bones not being possessed of sufficient firmness, become bent and distorted by the action of the muscles, the weight of the body, or the pressure of the ordinary clothing. The bones of the extremities are curved, often to a very great extent; the pelvis becomes narrowed by the lateral pressure of the heads of the thigh bones; the spine is curved in one or other direction, diminishing permanently, the height of the body, and causing very considerable and serious deformity; the scapulæ become prominent and projecting. and the shoulders so far thrown upwards, as to give an appearance as though the head had sunk between them; the ribs become flattened. or unnaturally curved, sometimes on both sides, but, more generally, to a greater extent on one side than on the other. The anterior part of the chest is projected forwards, and the sternum forms a prominent

ridge, or it is sunk between the cartilages of the ribs, the anterior curvature of the latter forming a ridge, on one, or both sides of it. The head is often greatly enlarged, and the sutures and fontanelles remain long unconsolidated. The chin is usually prominent, and the sides of the face flattened. The heads of the bones are large, and unusually spongy, and the joints loose, and destitute of firmness. Dentition is long in taking place, and when it commences is slow and protracted. There is generally great and progressive emaciation, from diminished nutrition of the soft parts, and, in many cases, the softened state of the bones is accompanied by a diseased condition of the glands of the neck and of the mesentery, and seldom exists long without some part of the bony structure; -either the spine, the knee, or hip joint, becoming the seat of disorganization; or tuberculous depositions occur in the brain or lungs. The phenomena now described, constitutes the affection known by the name of rachitis or rickets, which is fortunately one of rare occurrence in this country,

When death does not take place during infancy, but, the bones become more firmly ossified, and the patient attains to adult, or, as is frequently the case, advanced age, his body is generally permanently deformed, and often crippled, if disease do not occur to add to these, positive suffering. The subjects of rickets, to whatever age they may attain, have always debilitated frames, and are constantly liable to the occurrence of convulsions, or tubercular affections, particularly of the lungs. In the female, contortion of the pelvis may give rise to tedious or difficult labour, or render the birth of the child, per vias

naturales, impossible.

Independently of the defective ossification of the bones, in children predisposed to scrophulous disease, their structure is peculiarly liable to become the seat of a morbid action, by which portions of them are often completely disorganized. The spongy bones, as well as the spongy heads and extremities of the long bones, are especially the seat of this process of disease. There is, at first, increased vascularity of the bony structure, with a diminution of the earthy constituents; the cancelli become filled with a transparent fluid, which is subsequently replaced by the deposite of a cheese-like matter:—the morbid change often commences at the centre of the bone, the exterior remaining unaffected. In general, however, the affected bone becomes softer and more spongy, the cartilage is either detached entire, and becomes gradually softened, or it is detached slowly, and in layers, or irregularly absorbed. A portion of the diseased bone sometimes exfoliates; sometimes the disease extends to the shaft of the cylindrical bones, so as to convert them into a thin shell of earthy matter, the whole interior structure being disorganized. In the progress of the disease, inflammation, generally of a sub-acute character, takes place in the cellular membrane surrounding the affected joint, with the effusion, first, of serum, and afterwards of coagulable lymph; causing a puffy, elastic swelling, which becomes, subsequently, ædematous. The ligaments and synovial membrane are finally involved

in the disease, and an external opening, or several openings, taking place, a discharge of matter occurs, and numerous circuitous sinuses extend from the cavity of the joint into the neighbouring cellular tissue.

WHITE SWELLING.—When the disease of the bones we have just described, occurs at the joint of the knee, ancle, elbow, or wrist, it constitutes the disease denominated white swelling. The first symptom is usually a weakness of the joint; this is succeeded by a dull, heavy pain, which is generally increased by the motion of the joint, and sometimes when the patient is warm in bed. In the commencement, the pain is often very slight, in other cases, of considerable severity. It is very uniformly referred to the centre of the articulation. The pain, in many cases, is continued, in others irregularly intermittent, and in others again, somewhat periodical. There is at first very little or no swelling; sooner or later, however, more or less fullness of the joint is perceived, which gradually increasing, causes the diseased joint, in time, to acquire a very considerable magnitude. The swelling, at first, sometimes yields slightly to pressure, but never pits, and is always sufficiently firm to lead the inexperienced to suppose that it is produced by enlargement of the ends of the bones. The enlargement of the joint appears greater than it really is, in consequence of the emaciation of the limb, above and below. The skin enveloping the diseased articulation is not changed in colour, but becomes tense, smooth and transparent, the veins being visible beneath The pain is now generally increased, though it may still be comparatively trifling, amounting, in many instances, rather to a sense of uneasiness than of actual pain. When the swelling is seated in one of the lower extremities, the child is observed to limp occasionally; as the disease increases, the patient is unable to bear his weight upon the affected limb, in consequence of the great increase of pain which it occasions; he consequently acquires the liabit of touching the ground with the points of the toes only, and the knee being thus kept constantly bent, soon loses the power of being fully extended. A collection of matter finally forms about the joint; the pain now usually becomes more severe and continued; the skin becomes more tense, and of a darker, and finally purplish colour. Suppuration proceeds very slowly, and when, at length, the matter reaches the surface, one, or more, generally several, openings are formed, which give discharge to a thin, serous pus. with portions of curdy matter floating in it; as the discharge decreases in quantity, it becomes thicker, and ultimately assumes the same appearance as the matter found in scrophulous glands. Sometimes sinuses are formed, and the matter is discharged at a distance from the joint. From these openings, not unfrequently, small pieces of bone escape.

Occasionally, abscesses form around the affected joint within a few months from the invasion of the disease, while, on the other hand, the disease may continue for many years, without the occurrence of

suppuration.

The openings sometimes heal up very speedily, but other collections

of matter generally form, and new openings take place, and this may

continue to occur for a long period.

Disease of the bones may exist for many months, and even longer, without the occurrence of other than the local phenomena described. But, very generally, sooner or later, hectic fever, with profuse night sweats, and colloquative diarrhea ensue, under which the patient speedily sinks. In some cases, however, the diseased action in the bony structure is arrested, a curative action results, and the patient recovers, with anchylosis of the joint. Unless the disease is arrested in its first stages, the cure is always difficult and tedious, and the motion of the joint is invariably lost. When the bones of the carpus or tarsus are the seat of the disease, it is always more difficult to manage, from the facility with which the disease extends from one to the other of the small bones of these parts.

Very often, white swelling is accompanied with a scrophulous affection of the glands of the neck, and frequently, when the knee joint is the seat of the disease, enlargement of the lymphatic glands in the groin occurs; the latter affection, however, is seldom very trouble-

some. (Russell.)

The disease may occur without any very evident exciting cause, but is generally attributable to the effects of cold or damp, to vio-

lence, or to over-exertion of the joint.

HIP DISEASE.—Morbus Coxarius.—When the disease of the bones is seated at the hip joint, the symptoms to which it gives rise, are, in the earlier stages, extremely obscure, and very apt to mislead the inexperienced physician, in regard to the real nature of the case. The first thing that usually attracts attention, is a slight limp in the gait of the child. More or less uneasiness, scarcely amounting to pain, is soon experienced by the patient, but this is almost invariably referred to the knee, the hip being seldom complained of:—in many cases, however, there is a fixed pain behind the great trochanter, and in others, the patients complain of a painful sensation in the groin, shooting down, in the course of the vastus externus, to the knee.

From an early period, the limb on the affected side becomes emaciated, and very decidedly diminishes in diameter. The natural fullness and convexity of the nates become diminished, and that part which is usually most prominent, soon becomes flattened. (Ford.) Pressure on the front of the hip joint, a little on the outside of the femoral artery, below the pubis, will give rise to severe pain. The motion of the joint is evidently impeded; extension is performed with difficulty, and the heel of the diseased limb scarcely rests upon the ground; there is, also, great difficulty in flexion; hence, when the child attempts to stoop, he bends only the knee;—if desired to raise his foot upon a chair, the effort is so painful that he cannot accomplish the movement; while the rotation of the joint, especially inwards, is impeded, and cannot be accomplished without great pain. In consequence of the weight of the body being chiefly supported upon the sound limb, the pelvis is thrown downwards upon the affected side, so

as to give to the limb, on this side, an appearance of increased length. If the patient be placed upon his back, and a line drawn from the spinous process of one ilium to that of the other, there will be found

to exist a difference of an inch, or more.

The patient soon acquires the habit of throwing the entire weight of the body upon the sound limb, while the thigh of the affected side is bent somewhat forwards, and the knee flexed, so that only the toes come in contact with the ground. This position is found to be the most comfortable, and every attempt to extend the limb is attended

with considerable pain.

In some cases, the parts surrounding the diseased joint become somewhat swollen, tense, and extremely painful, and oceasionally the skin is reddened, and severe febrile reaction occurs; a circumseribed tumor forms in the vicinity of the joint, a fluctuation of fluid is perceived, the skin bursts, and a discharge of matter takes place. But more generally, suppuration within the cavity of the joint occurs slowly, the pain becoming, at the same time, more severe and continued; a thickening of the capsular ligament, and synovial membrane gradually takes place; the articular cartilages are, to a greater or less extent, destroyed; the round ligament becomes detached from the head of the femur which is pushed out of the articular cavity, until it passes beyond the acetabulum, and lodges upon the dorsum of the ilium, the foramen ovale, (Richerand,) or the ramus of the pubis. (Brodie.) The two latter modes of luxation are, however, extremely rare;—the dislocation being, in general, upwards and outwards: the affected limb is consequently shortened, the toes are turned inwards, the great trochanter is approximated to the crest of the ilium, and the leg is in a state of flexion. When shortening of the limb results from destruction of the head and neck of the bone, the toes are turned outwards, while the limb may remain parallel with the trunk.

Dislocation of the femur may occur, and the disease terminate in anehylosis, long before any suppuration takes place, in the parts surrounding the joint. Very frequently, however, abscesses form, and the matter travels generally down the thigh, between the trochanters and integuments, but in other cases, in the direction of the femoral artery, and, by its pressure, may occasion the absorption of a considerable portion of the vessel. When these abscesses burst externally, they continue, in general, to discharge an unhealthy, thin, purulent matter, often mixed with curdy flakes, for a considerable time.

After it has existed for some time, the disease of the hip is very generally attended with hectic symptoms, and considerable emaciation; in some patients, these symptoms occur at an early period; in others, not until late, or in very protracted cases of the disease.

Sometimes, before the head of the bone is dislocated, it is partly

absorbed; at other times, it remains entire.

In the dissections that have been made, at an early period of the attack, inflammation of the head of the thigh bone, with slight thickening of the capsular ligament has been observed. A small

quantity of matter has been found in the cavity of the joint, and slight crosions of the articular cartilage lining the acetabulum, with disease of the innominata. (Ford.) In more protracted cases, the parts surrounding the joint contain a quantity of adhesive matter, with destruction of the cartilages and ligaments of the joint; the bony structure composing the acetabulum, being extensively diseased, and in part absorbed, as well as the head and neck of the femoris. In general, some surgeons say invariably, (Ford.) the bones of the pelvis exhibit more extensive marks of disease than the head of the thigh bone.

In some cases, the disease appears to occur, as it were, spontaneously; in others, it is brought on by external violence, cold and damp,

or too long continued, or violent exercise of the joint.

DISEASE OF THE SPINE.—When the bones of the spine become the seat of scrophulous disease, the child becomes languid, listless, disinclined to play or move about, and is quickly tired when he attempts it. He frequently trips and stumbles, and when he moves hastily or unguardedly, his legs cross each other involuntarily, and he is thus often suddenly thrown down. If he endeavour to stand by himself, still and upright, his knees totter under him; he cannot, with any degree of precision or certainty, direct either of his feet to any particular point, but in attempting to do so, one will be brought across the other. He soon begins to complain of frequent pains and twitchings in the thighs, particularly when in bed, and of an uneasy sensation at the pit of the stomach. When he sits upon a chair, his legs are almost invariably drawn across each other, and up under the seat; finally, the child loses entirely the power of walking. If the disease be in one or more of the cervical vertebræ, the child finds it inconvenient and painful to support his head erect, and is desirous of leaning it on a table or pillow. If seated in the dorsal vertebræ, there is a dry, hard cough, laborious respiration, and the early occurrence of hectic symptoms; and frequently the arms are affected with spasmodic twitchings, involuntary contractions, and finally, entire loss of motion. When the lumbar vertebræ are affected, there is difficulty in discharging the urine, and the fæces will at length be discharged involuntarily.

In some cases, the loss of motion in the lower extremities is complete; in other cases, the patients are able to move about with the aid of crutches, or by grasping the thighs just above the knees, with both hands; some patients can sit in an arm chair, without much trouble or

fatigue; others cannot sit up at all.

The first indication of the disease is very generally, when the patient is old enough to describe his feelings, a fixed pain in some part of the spine, extending in the direction of the nerves which arise from that portion. There is, at the same time, a sense of weakness in the back, and pain in the sides, more marked in one than the other. Sooner or later, there takes place a destruction of the bodies of one or more of

the vertebræ, producing an incurvation of the spinal column for-

wards, and a corresponding projection backwards.

A wasting of the muscles of the back very generally precedes the spinal curvature, which is evinced by the child's head being inclined forwards more than natural, by one shoulder being raised above the other, and by a disposition to lean or recline, when sitting down; (Lloyd;) this, however, is much more common in cases of lateral curvature, in which the bones are not primarily affected with disease, but which result, in the majority of cases, from want of power in the muscles inserted in the spine, than in angular curvature, which is invariably dependent upon the destruction of the bodies of one or more of the vertebræ. We have occasionally noticed, however, this wasting of the dorsal muscles to take place early, in cases of the latter. The lateral curvature may, and often does, occur in children pre-disposed to scrophula, from defective nutrition of the muscles, but is not connected, necessarily, with scrophulous disease of the bony structure of the spine.

The spinal cord becomes incurvated with the vertebræ, and subjected to more or less pressure, from which results, in the progress of the disease, irritation and inflammation of the spinal nerves, chronic inflammation of the membranes of the cord, and occasionally of the cord itself. In some cases, the cord becomes so much compressed, as to deprive, almost entirely, the parts which receive nerves from below the point at which the pressure exists, of motion and sensation.

The natural cure of the disease of the spinal structure is by anchylosis, produced by the deposition of osseous matter, so as to attach together the surfaces of sound bone, which are brought into contact.

Disease of the spine is very frequently the cause of psoas and lumbar abscess. The danger of the disease will depend, in a great measure, upon its extent, and the nature of its complications, and the period at which the treatment is commenced. Where only one or two of the vertebræ are affected, and the disease is placed under proper medical care in its early stages, a cure may, in many instances, be effected, and little or no deformity remain. When several of the vertebræ are involved in disease, even though a cure should be effected, very extensive deformity will nevertheless be the consequence, rendering the patient, perhaps, a cripple for life. In those cases in which the disease of the spine is complicated with tubercular disease of the lungs, or with psoas or lumbar abscess, the event is generally, sooner or later, fatal.

Tubercular Depositions.—Under precisely the same circumstances as produce a predisposition to scrophulous disease, and very frequently associated with the latter, we find to take place, the formation in the texture of nearly all the organs, as well as upon the surface of the mucous and scrous membranes of tubercles, varying in size and appearance, either in their different stages, or according to the particular tissue in which they occur. Various opinions have been entertained as to their nature and origin, the merits of which it is not our

province, on the present occasion, to examine into. Tuberculous matter has been detected in the blood, a morbid constituent of which it would appear, therefore, to be; and it has been plausibly suggested that this matter is deposited in the tissues during the imperfect process of nutrition which takes place in certain constitutions, or that it is

separated from the blood with the secretions. (Carswell.)

Tubercles are generally described as of, at least, three different kinds, or as appearing under three different forms:—First, the grey, semi-transparent granulations, which have been supposed by some to be the primary form of tubercles. (Bayle, Laennec, Lewis.) Secondly, granulations, more opaque, and of a yellowish colour towards the centre; and, thirdly, granulations of a yellowish white throughout their whole extent, which are usually considered as perfect tubercles. The consideration of the succeeding changes which these granulations undergo, and the various causes which tend to promote their growth, and softening, belongs to a treatise on general pathology. Tubercles are incapable of organization, but appear to have the power of exciting certain morbid actions in the parts in which they are seated, which affect their own softening, while it produces disorganization of the latter.

It has been supposed by some, that in every instance of scrophulous disease, the peculiarities of the latter result from the deposition, in the affected tissues, of tuberculous matter, modified in its appearance and mode of deposition by the particular structure in which it occurs.

Tubercles may occur in almost every organ and tissue of the body; more especially during childhood. In children, also, they are more liable to occur, simultaneously, in a number of different organs, and while at this period they are met with less frequently in the lungs, they are more frequently formed in the bronchial glands, in the liver, spleen, pancreas, and in the brain and its meninges. (Lombard, Cowan, Carswell, Lloyd.) The pathological influence of tubercles upon the tissue in which they are deposited, it is not easy to understand;—they would appear, however, to predispose it to the occurrence of sub-acute inflammation, and, to a certain extent, to modify its phenomena, progress and results. Whether, in any instance, they can be considered as an exciting eause of disease, is uncertain. In numerous instances, we have met with them after death, in cases in which, during life, there were no indications to lead us to suspect their existence. Tubercles are, probably, in many cases, the result, rather than the cause, of diseased action.

Tubercles occur very frequently, in the brains of children, and are intimately connected with many of their cerebral diseases. They may form at almost any period of infancy or childhood, but are rarely met with previous to the first year, and would appear to be most common between the third and seventh years. (Green.) In many cases, they give rise to no symptom during life; in others, merely to a periodical head-ache, or to deafness, combined with purulent discharges

from the ear. The most common symptoms, however, to which tuberculous depositions in the brains of children give rise, are headache, vomiting, convulsions, amaurosis, paralysis, and diminution of the intellectual faculties. (Green.) Death generally takes place from acute hydrocephalus, softening of the brain, consumption of the lungs, or from the occurrence of some accidental disease, as small-

pox, &c. (Green.)

The chronic stage of cerebral tubercles varies from a few weeks to two years. In one class of cases, the disease commences with head-ache, followed by various lesions of sensibility, or of muscular power. The head-ache is often very severe and obstinate, preventing sleep, rendering the child fretful, peevish, or morose, and causing sometimes the utterance of acute cries, similar to those in cases of hydrocephalus. The pain is commonly seated in the forehead; in a few cases, however, in which the tubercles occupy the cerebellum, it is experienced in the occiput, and extends downwards towards the neck. The attacks of head-ache are occasionally associated with vomiting, which recurs on each exacerbation of the pain, and is independent of any disorder of the digestive organs. Constipation occasionally occurs, but less frequently than vomiting. The symptoms which succeed consist, chiefly, in lesions of the senses, the muscular power, or the intellectual faculties, as, loss of hearing, dimness, or total loss of vision, and a diminution of the cutaneous sensibility on one side of the body. Convulsive movements may occur at irregular intervals, and terminate in partial or total paralysis of one or more of the limbs; in other cases, we have merely a weakness of certain muscles, not amounting to paralysis—the child stumbles as it walks, and progression is much impeded; particular muscles, also, may be affected; thus, there may be a peculiar convulsive movement of the muscles of the eve-ball:—in a few cases, strabismus occurs. The child's temper may undergo a notable change, and the intellectual powers may become dull; but the disturbance or loss of the latter is rarely observed, except in cases of long standing, and towards the close of the disease. (Green.)

The various symptoms just noticed, are seldom permanent; the head-ache often disappears, after having existed several months, and again returns; the strabismus and amaurosis may also disappear, but the paralysis is generally permanent, especially when it occurs in the

limbs. (Green.)

In another class of cases, there is a sudden occurrence of convulsions, or an attack of true epilepsy; these recur at regular intervals, and gradually terminate in paralysis or coma. The convulsions may be general or partial, and are often followed by contraction of one or both extremities of the same side, or, the head may be drawn on one side, and remain in that position for a considerable length of time. Sometimes, the convulsions commence with nervous tremor of one arm, which may last for several weeks, and then terminate in epilepsy; in other cases, several attacks of convulsions may be followed

by a peculiar rotatory motion of the head, and in others, by squinting, and a lateral motion of the lower jaw. The convulsive attacks are rarely attended with either vomiting or constipation; (Green;) our own observations would, however, lead us to a different conclusion; vomiting we have certainly found to be as frequent in these as in the former cases.

In a third class of cases, the first symptom of disease is a paralytic affection of one or more muscles, or organs of sense. In the acute forms of cerebral tubercle, there is a succession of symptoms of an irregular character, and more or less allied to those of acute hydrocephalus, or softening of the brain. (*Green.*) Sometimes an attack of general convulsions terminates in fatal coma, or it may be

so violent as to cut off the patient in a few hours.

Upon dissection, tubercles, varying in size from that of a small nut or bean, to that of the double fist, (Green,) are found, most generally, in the substance of the hemispheres, either of the cerebrum or cerebellum, or of both, and occasionally in the cerebellum and pons varolii, or in the latter alone. (Green.) We have certainly met with tubercles of the brain, more frequently of a size considerably less than that of a pea, than beyond it, and as often upon the meninges as in the substance of the brain. The tubercles are often single, often numerous; twenty to fifty have been observed in one brain. (Green.)

In many cases, even when the tubercles are of considerable size, we are unable to discover the slightest change in the surrounding nervous substance, or in the neighbouring membranes. The gradual development of the tubercular mass seems to pass unheeded by the central nervous system. In other cases, the membranes adhere to the cortical substance, over the site of the tubercle, and are more or less infiltrated and thickened. Sometimes, when the tubercle is large, the convolutions are flattened or completely effaced. The colour and consistence of the nervous substance, immediately surrounding the tubercle, present a great variety of modifications:—it may be slightly injected, and softened to the depth of a few lines only; or the softening of the nervous tissue, with or without injection, may extend to the central parts of the brain;—in some cases, nearly the whole of the cerebellum is reduced to a mere pulp. In a few rare examples, on the contrary, the surrounding nervous tissue is more pale, and of a denser structure than is natural; sometimes it is soft, and of a straw colour. Abscess or true infiltration of pus, in the immediate vicinity of cerebral tubercle, is rarely, if ever observed. (Green.)

Tubercles of the brain are very generally associated with other scrophulous indications. The first dentition would appear to be their principal epoch, though, in many cases, they will be found to succeed to acute or chronic affections of the gastro-intestinal mucous mem-

brane, or to the exanthematous fevers.

Treatment of Scrophula. There is no specific for the cure of scrophula. If we are correct in our views, in regard to its pathology—if the morbid condition of the system depends upon a defective assi-

milation and sanguification, in consequence of which the blood is rendered deficient in its healthy organization, and nutrition is, in consequence, imperfectly performed. If the whole of the organic functions are inactive, it is evident, that our endeavours should be entirely directed to improve the condition of the blood, and render nutrition more active and perfect, and, in this manner, correct the morbid constitution of the body, which constitutes the essential foundation of the Medicinal agents, however important and essential they may often become, for the removal of certain morbid symptoms, are not to be considered as those, upon which our chief dependence is to be placed, in effecting that change in the condition of the organic functions, which is essential to improve the general tone and vigour of the system; -this can only be done by placing the body, under the influence of those natural agents, by which alone its healthful action is to be promoted and sustained. From alteratives and tonics, we can expect but little, but from a proper diet, pure fresh air, sufficient exercise, cleanliness, and proper clothing, in conjunction with a due regulation of the moral and intellectual powers—in every case, when sufficiently early resorted to, the most prompt and decided benefit will be invariably derived; and without their influence, under no circumstances, can we expect to prevent the inroads of painful and destructive disease, or to arrest its progress, after it has occurred.

In regard to every child, the same hygienic agents are essential to preserve and promote the health, vigour, and regular development of its frame, but in one who is delicate from birth, or who exhibits, at an early period, the striking characteristics of the lymphatic temperament, with languid circulation, and a predominence of the white fluids and tissues, they become doubly important; their neglect will endanger the occurrence, sooner or later, of serious and even fatal disease, while proper and unremitting attention to them will seldom fail to improve the constitution of the blood, and render nutrition more

active and healthy.

We have, in the commencement of the present treatise, entered, with sufficient minuteness into a consideration of the hygienic management of children, to render it unnecessary, in this place, to go into further details:-we need only add a few remarks, in regard to it, so far as it respects such patients as already present indications of the invasion of scrophulous disease. Air, exercise, and proper nourishment are, in these cases, our chief remedial agents. (Cooper.) Animal food, with a proper mixture of the more readily digested farinaceous vegetables, will, in general, be essential, after the child is weaned; but previously to this, the only appropriate diet is the breast milk of a perfectly healthy nurse. The proper species of animal food, and the manner in which it is cooked, require, also, to be attended to. Beef, mutton, venison, chickens, turkeys, and most kinds of game, with fresh laid eggs, and fresh milk, with stale bread, crackers, potatoes, and rice, should constitute almost the exclusive diet, in the cases referred to. In regard to cookery, the meats should be plainly roasted, broiled, or boiled, or the beef may be eaten, in the form of steak, and the mutton, in that of chops. The milk may be taken, without any preparation, or simply boiled, according as it is found to agree with the patient's stomach; it may, also, occasionally be taken, with mush, boiled with rice and sweetened, or with eggs, in the form of plain custard, or with rice or bread, in the form of plain pudding. The eggs should be boiled, but not hard. The bread should be of wheat, or wheat and Indian, and not eaten until twenty four hours, after it is baked. The potatoes should be roasted, in which form they are easier of digestion, and agree better with the stomach, than when boiled. In regard to condiments, these should consist of salt and cayenne pepper for the animal food, and sugar, and perhaps cinnamon or nutmeg for the preparations of milk. The condiments, however, should be used in moderation, and rather with the view of imparting an agreeable relish to the food, than for the purpose of stimulating

the appetite.

While a sufficiency of food is allowed properly to nourish the system, caution must invariably be exercised to prevent it being partaken of in too great quantities at a time, or too frequently. No general rule can be laid down, in respect to these important points, as much will depend, in respect as well to the quantity of food, as to the frequency of the meals, upon the condition of the patient's stomach, his age, and the particular circumstances of his case. Three meals, at two of which animal food may be allowed, and milk or eggs at the third, will usually be demanded; but, in some cases, four meals may, with propriety, be allowed, animal food forming the principal part of three of them. The first meal should be taken, soon after rising in the morning, and the last meal in the day, late in the afternoon, two or three hours previous to retiring to rest. In regard to diet, it must be recollected, that the functions of the stomach may be as much deranged, and the proper nutrition of the system as much impeded, by too great a quantity of food, even of a proper quality, as by that which is bad or deficient. For drink, nothing should be allowed but pure water or toast water; we say pure water, for there can be no doubt, that impure water is decidedly prejudicial to health, and some have even supposed, that hard water is a cause of scrophula. (Herbeden, Cullen, Lambe, Clark.) The effects of the water habitually used as drink, as well as of the air we breathe, though insensible, are not the less certain and powerful:—the quality of the water made use of, during health as well as disease, merits more attention than has generally been paid to it.

By most of the English physicians, an occasional glass of good beer or wine is recommended, but to this we must positively object; alcoholic drinks, whether fermented or distilled, are not, in any degree, calculated to promote digestion, nor to improve the nutrition of the organs, while they have a decided tendency to promote habits, which, in after life, may even prove a greater curse than the worst effects that can result from that defective state of the organic structure, in which we have presumed the tendency to scrophulous disease mainly, if not

entirely, to consist.

Pure and fresh air is as essential as proper and sufficient nourishment. It is too much the custom to confine, within doors, the weak and delicate, whereas of all persons they the most demand frequent exposure to the open air; and, with proper clothing and due precaution, such exposure may, with great propriety and decided advantage, take place in children of four or five years of age, even in the colder season of the year, during perfectly clear weather; but even, when the weather is such as to prevent the child from being taken out, the advantages of a fresh and pure air may be afforded it by proper ventilation, the strictest attention to domestic cleanliness, and by guarding against over-crowded apartments, by night as well as by day. Where we can command it, the atmosphere of a dry elevated situation in the country should always be preferred to the atmosphere of a city.

In connection with the subject of air, is that of exercise, a proper daily amount of which should invariably be taken by the child out of doors. The exercise should, of course, be adapted to the strength and age of the child, but should always be as active as can be allowed, without the fear of its inducing undue fatigue. Sir Astley Cooper states, that he has seen five hundred cases of scrophula, in the course of a single year, with scarcely a single boy among them, and this, from the circumstance, that boys will take exercise, while girls are

not allowed to.

As a substitute for exercise, in cases in which the debility of the patient is so great as to render a sufficient amount of such as is of a more active kind impossible, frictions of the surface, repeated daily, either with the hand, or a proper flesh brush or cloth, will be useful; and, in all cases, it will be proper, even in connection with exercise; but it will never supply fully the place of the latter, in a pure, fresh atmosphere.

For young children, the usual sports of their age—riding occasionally in an open carriage—short walks or jaunts, with some pleasing and moderate occupation of the mind, in the intervals, will suffice. For older children, various recreations present themselves, of an innocent character, which call into sufficient exercise the muscles of the body. Riding on horseback is a very admirable mode of exercise for those sufficiently old to partake of it with safety; especially for girls, who cannot easily obtain a sufficient amount, in any other manner.

Frequent bathing will be necessary, as well for the maintenance of personal cleanliness, as to promote and maintain the regular actions of the cutaneous exhalents. The warm bath should be employed, when the temperature of the surface is deficient, with considerable languor of the circulation; but in patients possessed of greater vigour, and in whom the temperature of the skin is better maintained, the tepid bath may be substituted. Sponging the surface with tepid water or salt and water, followed by brisk friction, will also be highly beneficial.

A bath of sea water, when practicable, may be taken three times a week, at eleven o'clock in the morning. The temperature of the

37

bath should be ninety-four degrees, and the child may remain in sixteen or twenty minutes; after which friction to the skin may be employed, or a walk taken. A child may be brought to bear the bath by sponging or sprinkling the surface daily, with tepid water. (A. Cooper.) Bathing in the open sea, when it can be borne without producing languor or chilliness, will unquestionably be proper, in the generality of cases. Against cold bathing, which is recommended by writers of even a recent date, we most positively protest; the idea of its exerting a direct tonic effect has originated in false views, as well of the action of cold upon the human system generally, as of the particular circumstances under which the reaction it gives rise to, invariably occurs. To immerse a weakly child in cold water, would be more likely to produce and increase the tendency to scrophulous disease, than to prevent it, if it did not cause more immediate, and even more dangerous results.

In regard to clothing, this should be accommodated to the temperature of the season, and adapted in quantity, material and form, to preserve, as far as possible, a uniform temperature of the surface:
—guarding against the slightest sensation of chilliness, in cold or changeable weather, and too much heat or excessive perspiration, during the summer. As a general rule, liable, however, to some exceptions, flannel next the skin should be worn during the autumn and winter, and late in the spring; for the remainder of the year, coarse

muslin may be substituted.

The mind should be occupied and amused, without being fatigued, or too much excited; and every means calculated to promote cheerfulness, bouyancy of disposition, and equanimity of temper, should be put in requisition, and every depressing influence carefully removed.

When there exists considerable torpor of the digestive functions, and constipation of the bowels, with dark coloured, or pale clay-like, unhealthy evacuations, it will be proper, at an early period, to endeavour to excite the whole alimentary canal to a more healthy action. Purgatives will, in general, be required;—rhubarb and magnesia, the compound powder of jalap, or in older children, the blue mass, combined with rhubarb and ipecacuanha, will generally answer our purpose, or an occasional dose of calomel combined with magnesia, and followed by moderate doses of senna tea, the compound powder of jalap, or of the sulphate of magnesia, may be employed. The article which has answered best in our hands, has been the compound powder of jalap; it was a favourite prescription of Dr. Physick, in scrophulous disease of the hip joint :- he gave it every day or every second day, so as to keep up a steady and tolerably brisk action upon the bowels; under its use we have known the health and strength of the patient rapidly to improve, and his attenuated limbs to become augmented in bulk, and increased in firmness. Of course, the doses of the purgatives employed, and the frequency of their repetition, must be governed entirely, by the age of the child, the condition of the bowels, and the effects produced.

In many cases, after the bowels have become more regular, and the

stools of a more healthy appearance, some light tonic may be given, with the view of improving the digestive powers of the stomach; the proto-carbonate of iron may be administered, in the dose of a few grains combined with the sulphate of quinia, daily, for a short time: or, we may give the carbonate of iron with rhubarb, and a little orange peel²; or the following, which is a good preparation for the same purpose. We may remark, that preparations of iron appear to constitute the best tonic, in that state of the constitution which predisposes to scrophula. (Coster, Küppe, Legaire.) During the exhibition of these remedies, whether purgative or tonic, constant attention should be paid to the diet, and general hygienic management of the child.

*R.—Carb. ferri, gr. xxxvj—\(\)j.

Pulv. rhei, gr. xxiv—\(\)gss.

— cort. aurant. \(\)ji.—M. f.

chart. No. xij.

One for a dose daily, or twice a day.

bR.—Sub. carb. sodæ dessicat. gr. xlviij— Biijss.
Pulv. calombæ, 7ij.
— rhei, 7ss.—M. f.
ch. No. xij. (A. Cooper)
To be given as the last.

We have, heretofore, presumed that the symptoms of local disease have not presented themselves; that the child is merely labouring under a state of general debility, the result of imperfect assimilation and hæmatosis, and deranged or deficient nutrition; and that our only indication is to improve digestion, render sanguification more perfect, and the nutrition of the solids more regular and complete. It is true, that, in every case and stage of scrophulous disease, this indication is still to be fulfilled; but the mode of fulfilling it will demand some important modifications, according to the particular circumstances of each individual case.

When the usual symptoms of gastro-intestinal disease are present tenderness of the epigastrium or right hypochondrium, loss of appetite, nausea, irregularity of bowels, dryness and increased heat of the surface, and a red dry tongue-animal food should be forbidden-a moderate quantity of some of the lighter farinaceous preparations—weak chicken water or whey, with gum, barley, rice, or toast water for drink, should constitute the diet, until the above symptoms be removed. The treatment of the gastro-intestinal disease is to be conducted on general principles—leeches, according to circumstances—warm fomentations-minute doses of calomel and ipecacuanha, with the occasional interposition of a saline purgative, among which one of the best is probably the citrate of magnesia. The nitrate of potassa has been highly spoken of as a remedy, in the cases of gastro-intestinal disease occurring in subjects presenting a tendency to scrophula, and it is asserted, that, when combined with mercurials, the efficacy of the latter is increased. (Todd.) We have used it, in many cases, in small and repeated doses, with certainly very good effects. During the continuance of disease of the digestive mucous membrane, active exercise will be improper; indeed, friction of the surface, repeated daily, will, in the majority of cases, have to be substituted for exercise of every species.

After we have succeeded in completely removing the irritation or sub-acute inflammation, the diet of the patient should be gradually and cautiously improved—chicken water, beef tea, afterwards the gravy of meat, then broths, then small portions of chicken, or mutton, or beef, until a full animal diet can be taken, with safety. At the same time, the use of tonics may be entered upon, with benefit, when, if they had been given previously, they would have rather tended to augment and confirm than remove effectually the debility of the system. The calybiates, as already remarked, either alone or conjoined with weak cold infusions of bark, infusion of chamomile, or the calomba in substance, will be among the best tonics, in these cases. proto-carbonate or the ferrum tartarisatum, or a combination of the latter with small doses of carbonate of iron, or the nitrate or sulphate of potassa, may be given, or the tincture of the sesquichloride of iron combined with iodine; or we may employ the iodide of iron. (Philips.) These articles should be administered for several days in succession, and then intermitted for a day or two, the bowels being, in the mean time, kept regularly open, by means of occasional doses of some mild purgative; and at the same time, the child should be placed upon a proper hygienic treatment, without which tonics, however judiciously selected or long-continued—and in general, to derive from them their full effects, they must be persevered in for a length of time-will be productive of little or no good.

aR.—Tinct. ferri sesquiehlor.
Tinct. iodine, aa, Zij.
Aquæ puræ, Zss.—M. (Todd.)

Aquæ puræ, 3ss.—M. (Todd.)

Dose,—thirty drops, three times a day, for a child ten years of age, and a smaller portion for those younger.

When enlargement of the lymphatic glands occurs, so long as the glands remain indolent, no other treatment is required than that which is calculated to improve the general condition of the system. Iodine, both internally and locally, has, by many writers, been considered almost a specific, in these, as well as in most of the local affections of a scrophulous character, (Lugol, Coindet, Magendie, Dumeril, Manson, Clark, Todd, Eager, Baudelocque, Baron, Wolff, Paup, Wutzer, Heester, Brera,) while others consider it of very little value as a remedy in any of the scrophulous affections; we have never, certainly, seen those striking effects produced by its use, reported to have been observed by others. The evidence in its favour, is too strong, however, to allow of our doubting its curative powers, in many cases.

The solution of Lugol is, perhaps, the best form, in which the iodine can be given internally, or we may employ the iodide of iron. Externally, iodine may be used, in the form of solution, or of ointment.

*R.—Iodin. 9j.
Potassii iodidi. 9ij.
Aquæ destillat, Zviij.—M.
For children under seven years, the dose is two drops, twice a day, gradually increased to five drops. From the age of seven to fourteen, sixteen drops, twice daily, in sweetened water.

bR.—Ferri iodid, gr. v.
Aquæ destillat. Jj.—M.
Dose,—a tea spoonful, three times a d

Dosc,—a tea spoonful, three times a day, in sugared water; gradually increased by adding ten drops, daily, to each dose, until the dose amounts to two tea spoonsful.

⁸R.—Iodin. Jij. Potassii iodidi, Jiv. Aquæ destillat. Jv.—M.

cR.—Iodin. gr. xij.
Potassii iodidi, Iss.
Axung, Jij.—M.

The state of the bowels should be attended to, agreeably to the

directions already given.

When the enlarged glands become painful and sore to the touch, the ordinary local applications for inflammation should be resorted to. In many cases, a few leeches will be useful; but, in general, we may trust to cooling or evaporating lotions, or the solution of the acetate of lead. As soon as a tendency to suppuration is evinced, an ordinary emollient poultice should be applied, and when a distinct fluctuation is detected, an opening, transversely, in the direction of the folds of the neck, should be made with a lancet:—this will often prevent extensive ulceration, and its consequent unsightly scar. It is true, that, even after suppuration has taken place, the contents of the abscess will occasionally be absorbed, and the tumor disappear without rupturing; we are not, however, perfectly convinced, that this result is always to be desired: -- after matter is formed in a scropliulous gland, we confess, that we should prefer its discharge to its absorption. After the opening of the abscess, a common poultice is one of the best applications that can be made to the part. When ulcerations form and show no disposition to cicatrize, a solution of the sulphate of zinca will often be found useful to promote their healing; in some cases, however, it will be necessary to touch the edges of the ulcer with the nitrate of silver. When very irritable, the ulcer may be washed with a weak solution of the nitrate of silver, and then covered with a poultice of bread and water; in these cases, poultices of the leaves of hemlock, or of sea weed, have been recommended; but our great object should be to correct the condition of the general system, for until this is effected, the ulcers seldom, if ever, are found to assume a healthy appearance, and to heal perfectly. A hard, indolent tumor will sometimes remain subsequent to the cicatrization of the ulcer, the discussion of which may be attempted by some one of the various ointments of iodine; so long as any pain or tenderness remains in the part, however, the use of these will be improper; and, if pain or irritation arise during their use, they should be immediately discontinued, and soothing applications resorted to.

²R.—Sulph. zinci, gr. x. Aq. puræ, Zviij.—M.

In cases of scrophulous opthalmia; if the affection of the eye is recent and acute, the application of a few leeches to the temples, and to the external angles of the eye, will often be advantageous; in cases of a decidedly chronic character, or which have already existed for some time, leeching will not only be useless, but often decidedly injurious. In cases of a very acute character, in which there exist considerable redness and pain of the eye, and a decided febrile reaction, it may be even necessary to repeat the leeches; but, in every instance, we must

be cautious not to carry the depletion too far. The best local application, when the eyes are very red and painful, is the crumb of bread wet with cold water, during the day, and a portion of alum curd, enclosed in a fine muslin bag, during the night. The eyes should be invariably shielded from the direct rays of light, by a broad, deep green silk shade, so shaped that it may stand out well from the fore-head, and admit the access of air to the eyes. This management of the shade is of great importance; as those usually employed, which are small, and lie close to the eyes, do more harm than good. (Maunsell.) All local applications of an astringent or stimulating character are not only wholly useless, but decidedly improper; we have repeatedly seen them keep up the pain and redness of the eyes, which have rapidly improved in appearance, so soon as such appplications were discontinued, and a poultice of bread and water applied.

When the appetite is variable and capricious, with a hot, dry skin, quick pulse, and coated tongue, considerable advantage will often be derived from an emetic early administered. An aqueous solution of tartar emetic would appear to be the best emetic in these cases; it may be followed up with minute doses of antimony, combined with the sulphate of magnesia*—this treatment, however, is more particularly adapted to the acute form of the disease, occurring in children over ten years of age—or we may give minute portions of calomel and pulvis antimonialis, to which, when there is very great irritability, and want of rest at night, a small portion of Dover's powder may

be advantageously added.

aR.—Sulph. magnes. Ziij.
Antimonii tart. gr. j.
Aquæ, Ziij.—M.
Dose.—A teaspoonful every two or three
hours.

^tR.—Calomel. gr. ij.
Pulv. antimonialis.
"Doveri, aa gr. vj.—M. f. ch. No.
xij.
One of which may be given every three or
four hours.

In many cases of the disease, there is a loaded and torpid condition of the alimentary canal, with a hard and tumid abdomen, irregularity of the bowels, and an unnatural appearance of the discharges; in these, active purgatives will be found of advantage; by their action, a large amount of unhealthy looking fæces is often brought away, to the manifest improvement of the condition of the patient; subsequently, after the bowels have become regular, and the discharges of a better appearance, little else is often required to effect a cure, than some light tonic and a well regulated diet. A dose of calomel, combined with rhubarb and magnesia, may be given, and repeated every two or three days, so as to produce a brisk action upon the bowels; or we may administer a few grains of calomel in the evening, and on the succeeding day, the compound powder of jalap, castor oil and turpentine, or an infusion of senna, with the addition of the sulphate of magnesia. After the bowels have, by these, been well evacuated, they should be kept regularly open by occasional small doses of calomel, followed by the compound powder of jalap, or by the use of this latter, alone. We are to recollect, however, that, while the most decided advantage is to be derived from the judicious employment of purgatives, too violent or long continued purgation is invariably pre-

judicial.

After a more healthy and regular condition of the alimentary canal has been produced, the carbonates of soda and potassa, either by themselves, or combined with rhubarb, calomba, or a weak infusion of chamomile, quassia, or bark, will often be productive of the best effects. (Wardrop.) The sulphate of quinia is, however, probably the tonic best adapted to these casesa, and when administered after the disordered condition of the digestive organs has been removed, will, generally, very quickly affect a complete cure. (Mackenzie, A. Cooper.) The preparations of iodine will also, in the more chronic cases, be found beneficial, particularly the iodide of iron. The hydrochloride of barytes is very strongly recommended by a few writers in the disease before us, as well as in the other forms of scrophulous disease; —it may be employed in solution. (Hufeland, Wolff, Brandt.) know nothing of its effects from our own experience.

*R-Aq. cinnamon. Ziij. Sulph. quiniæ, gr. vj.-x. Acid. sulph. dilut. 11 iv .- vj. Sacch. alb. Ziij .- M.

Dose .- A teaspoonful every four hours, for a child from three to seven years of bR .- Hydrochlor. baryt. 3j. Aq. destillat. Zij.—M.

Dose.-From ten to twenty drops, two or three times a day, to a child between three and seven years of age, in the syrup of sarsaparilla.

The diet of the child should be carefully attended to during the acute stage; in the more violent forms of the disease, he should be confined exclusively to some simple farinaceous article of food, and toast, barley, or rice-water for drink. He should be immersed daily in a tepid bath, or have the whole surface sponged with tepid salt water. Friction of the surface, with the hand or flesh-brush, will also be important. The purity and dryness of the air which the patient breathes, is a matter of very great importance, and should never be neglected; a patient with scrophulous opthalmia, or in fact, any of the forms of scrophulous disease, will rapidly improve in a dry, fresh atmosphere, with very few remedies beyond those of a hygienic character, while one confined in a close, impure, and damp atmosphere, will exhibit but slight indications of amendment, under whatever plan of treatment may be adopted. The body of the patient should be sufficiently, but not too warmly clothed; the hair should be cut short, and the head and neck sponged with tepid water every morning, and then thoroughly dried. (Wardrop.)

The child should not, when it can be prevented, be allowed to keep his bed during the day, nor, at night, to lie with its face buried in the It is not necessary to confine the patient to a darkened room, if the shade for the eyes, already described, be worn; free exposure to the open air, whenever the weather is perfectly clear and mild, being of advantage, and contributing, very powerfully, to the cure.

Blisters to the nape of the neck, or behind the ears, kept on for a few hours, and then removed; the blister being reapplied as soon as the inflammation produced by the first has subsided, will, in most

cases, be found advantageous. (Travers.)

In mild, recent cases, the occasional use of a collyrium, composed of a solution of the sulphate of zinc or alumine in rose-water, from three to five grains to the ounce, will oceasionally be found useful; or we may employ a very weak solution (one grain to eight ounces) of the bichloride of mercury, in pure water, or rose-water. (Mackenzie.) When the pain and intolerance of light are very severe, warm fomentations to the eye, as hot as they can be borne, will often afford very decided relief; a pledgit of soft muslin, or of lint, or a piece of soft sponge, saturated with warm water, or an infusion of poppy heads, or chamomile flowers, may be applied upon the eye during the day, and replaced by warm bread and water poultices during the night. The anodyne effects of the vapour of laudanum, or of a vinous tincture of belladonna will often prove beneficial; either of these being mingled with a cupful of hot water, the eye should be

exposed to the vapour two or three times a day.

After the intolerance of light and spasmodic contraction of the orbicular muscle have so far subsided, as to permit the patient to unclose his eyes in a moderate light, scarification of the conjunctiva of the lids, will often be followed by very considerable relief; the operation may even be repeated a few times, after intervals of two or three days, until the increased fulness of the vessels, and the thickening of the lid is removed. (Wardrop.) Subsequent to the scarification, benefit will generally result, in cases of a very obstinate character, from inserting a small piece of the ointment of the peroxyde of mercury (fifteen grains to the ounce of lard) within the eye-lids. The introduction of the ointment may be repeated at bed-time, every night, or every second night. In severe and obstinate cases, this will be found a useful practice, even when searification has not been resorted to; or, a few drops of the solution of nitrate of silver, (two grains to the ounce of water,) or of the vinous tineture of opium may be instilled into the eye, daily, or every other day. These applications have a very decided effect in diminishing the irritability of the diseased organ, in promoting the healing of the ulcerations of the cornea, and dispersing any opacities which these may have oeeasioned. (Taylor.)

When a granular condition of the conjunctive occurs in chronic cases, collyria of a solution of the nitrate of silver, or a solution of sulphate of copper, (four grains to the ounce of water,) will be re-

quired.

In cases where there exists considerable disease of the tarsal edges of the eye-lids, this may be relieved by the application, either of the ointment of the peroxyde of mercury, or, what is still better, the ointment of the nitrate of mercury, diluted with one-half or one-third

of its weight of fresh lard; this being rendered soft, should be applied by means of a hair pencil, along the edges of the lids every evening.

Large ulcerations of the cornea, which exhibit any tardiness in healing, may be touched by means of a hair pencil, with a solution of nitrate of silver; or, when the ulcer is small, deep, and funnel-shaped, with a pencil of lunar caustic, cut to a fine point. When prolapsus of the iris occurs, the protruding portion should be touched every second or third day with the caustic. In cases of deep central ulceration, with adhesion of the iris, the extract of belladonna, reduced to the consistency of a thin paste, by the addition of water, and smeared upon the forehead, over the eye-brow, by causing the dilatation of the pupil, will either have a tendency to free the iris, or to clongate to such an extent its attachment, as to prevent the loss of vision.

When a vascular speck occurs, its progress may often be arrested,

by removing a portion of the enlarged vessels running into it.

Let it be recollected, however, that in every case of scrophulous opthalmia, and during every stage of the disease, our chief attention should be directed to a correction of the morbid state of the general system; without this can be effected, remedies directed solely to the local disease, are worse than useless: while, by restoring health and vigour to the organic functions, and thus improving the strength and tone of the whole body, cures have been repeatedly effected, without

a single local application, or, so called, specific remedy.

Scrophulous inflammations of the ear, require the same unremitting attention to the condition of the digestive organs; the same course of treatment, directed to render assimilation, hæmatosis, and nutrition more active and complete, as is demanded in the disease we have just considered. The same general remedies—purgatives when the bowels are loaded and sluggish, followed by mild laxatives, or small, repeated doses of calomel, with the occasional interposition of a mild laxative, and followed, when a more healthy and regular condition of the bowels has been obtained, by similar tonics to those directed

in cases of scrophulous opthalmia, will be called for.

In regard to the treatment of the local disease, this must be conducted upon general principles:—in cases attended with symptoms of a good deal of severity, leeches, a mild, unirritating diet, and the use of the tartarized antimony, with nitre, and calomel, or with the sulphate of magnesia in solution, as directed in scrophulous opthalmia, will be proper. The local applications consist in the injection into the ear of simple tepid and emollient fluids, and the application, externally, of an emollient poultice; when the meatus externus is hot, and its lining membrane hot and swollen, warm fomentations assiduously applied to the ear and side of the head, and leeches behind the ear; blisters applied to the nape of the neck, or behind the car, and frequently repeated, are all important remedies. In the more deep-seated inflammations of the ear, the tartar emetic ointment may be rubbed upon the mastoid process,

until local irritation is produced. (Kramer.) In the more chronic cases of the disease, slight astringent injections may be resorted to, at first of tepid rose-water, and subsequently of a very weak solution of the acetate of lead, two or three grains to the ounce of water, or of the acetate of zinc, of similar strength, or of the nitrate of silver, one grain to the ounce. The strength of these injections may be gradually and cautiously increased; but in all cases we must be careful not to arrest too early or suddenly, the discharge from the ear, nor until the health of the general system is considerably improved. If the discharge becomes offensive, a few drops of the chloride of lime, in an ounce of water, may be injected.

Whenever, during the use of astringent injections, the discharge begins rapidly to diminish, it is as well to desist for a time from their use, and resort to those of a simple emollient character. (Krukenberg.) Should the arrest of the discharge be followed by any unpleasant symptoms, warm fomentations, and simple bread poultices, should be

applied to the ear, as hot as they can be borne.

The discharge from the vagina, in scrophulous girls, requires little treatment beyond that which is demanded for the improvement of the general health of the system; frequent lotions of the parts with some mild emollient, or slightly astringent fluid will be proper. In most cases, the condition of the alimentary canal will indicate a course of purgatives, and alterative doses of calomel, as in the last two diseases.

Tabes mesenterica. The particular treatment of scrophulous enlargement of the mesenteric glands, is of secondary importance to that of the gastro-intestinal disease, with which it is invariably connected. This demands precisely the same remedies as when it occurs in a patient in whom no pre-disposition to scrophula exists—with this only exception, that the extent to which the depletory treatment is to be carried, must be governed by the condition of the patient's system, as well as by the urgency of the symptoms present;—in other words, it must be constantly borne in mind, that in patients in whom there exists a decided tendency to scrophulous disease, remedial measures of a debilitating character, even with the same violence of symptoms, cannot be carried as far as in a patient in whom no such predisposition exists. As soon as the disease of the mucous membrane of the alimentary canal is subdued, the child should be put upon an improved diet; meat broths, prepared with particular reference to their nutritive and digestible properties, may be given as soon as prudence will permit, and at the same time, a course of purgatives should be commenced with. The carbonate of potassa or soda, with some light bitter infusion, or, where there is a tendency to constipation, combined with rhubarb and nitre, may be commenced with, at an earlier period perhaps, than more active tonic remedies, and will be very useful so far as the disease of the glands is concerned.

Iodine, both internally and externally, would appear to be the remedy best adapted to the cure of enlarged mesenteric glands, occurring in children of scrophulous habits. Lugol's solution may

be given, in doses of from three to six drops, two or three times a day; or, we may employ the hydriodate of potassa, in the dose of half a grain to a grain, in a spoonful of the decoction of sarsaparilla two or three times a day; the hydriodate of potassa will agree better with the bowels:—if these are in the least degree irritable, the addition of a small portion of the syrup of white poppy, or of the tincture of opium, to each dose, will lessen its liability to disagree. (Evanson.) The iodide of iron may, in many cases, be advantageously employed instead of, or in alternation with the foregoing. If, however, under the internal use of iodine, irritation of the digestive organs should ensue, it should be at once suspended, and the means for allaying the irritation resorted to.

The best form for the external application of iodine, is that of the ointment of the iodide of lead, (half a drachm to the ounce of lard.) When, however, its use could be persisted in sufficiently long, without inducing considerable irritation of the skin, we have experienced the very best effects from the ointment of the hydriodate of potassa, (half a drachm to the ounce of lard.) The ioduretted baths we have never employed; of their effects, therefore, we know nothing from our own experience; they are, however, highly recommended by others, and may, in some cases, be found of benefit. These baths are formed by dissolving one grain of iodine and two of hydriodate of potassa in a gallon of water.

In protracted cases, change of air, frequent bathing in tepid salt water, or daily sponging with simple warm or salt water, followed by brisk frictions to the surface, a cautious course of calybiates, and a well regulated diet, constitute the plan of treatment to be pursued. When, however, the disease has been of long continuance, little hopes are left of effecting a cure; very generally the patient sinks under hectic-fever, night-sweats, and colloquative diarrhea, or tubercular depositions take place in the lungs or other important organ, and sooner or later, by impeding their functions, terminate

the life of the patient.

In the scrophulous disease of the bones, denominated rickets, little else is demanded than a strict attention to those hygienic measures that are adapted to improve digestion, and render more vigorous and perfect the whole of the organic functions. A proper diet, pure air, the tepid bath, and sponging with tepid salt water, together with friction of the surface, daily but cautiously performed, are the agents from which the greatest amount of good is to be anticipated. The diet of a ricketty child, should be light, easy of digestion, and abounding in nutritive matter. Previous to weaning, the breast-milk of a healthy nurse is invariably to be preferred; and subsequently, meat broths, with the farinaceous vegetables, or beef and mutton plainly cooked. Children suffering from rickets, are unfortunately precluded from active exercise; the utmost care should indeed be taken, not to allow them too soon to assume the erect position, or to attempt to walk; they may, however, be passively exercised, by being carried

abroad in a carriage, or in the arms of an attendant. In earrying, or even handling a rieketty child, or one strongly predisposed to become so, great pains must be taken to avoid undue pressure upon any part of the body, or to place it in any position by which the spine or either of the long bones may become distorted. Its clothing, also, should be perfectly free and loose;—in the soft and yielding condition of the entire bony structure, any part of the clothes being allowed to bind, or compress unduly the chest or limbs, may, by preventing the full development of the first, and producing a change of shape in the latter, independently of the deformity to which it gives rise, cause permanent decrepitude, or a serious interference with the free and regular action of important organs. The child should not even be allowed to lie too long in the same position, to guard against too much and constant pressure on particular bones.

Any symptoms of local disease which may occur in patients affected with rickets, must be combatted by their appropriate remedies. The sluggish and deranged state of the bowels will very generally call for purgatives, and the employment of calomel in alterative doses; carefully, however, guarding against the production of its specific effects. As soon as the regular and healthy condition of the alimentary canal has been established, tonics, as in other cases of scrophulous disease, may be administered, and will often be productive of very decided advantage; the calybiates and iodine, and occasionally, the sulphate of quinia, constitute our best tonics in these cases;—it is in them, also, that the hydrochloride of barytes is said to be particularly beneficial. During the whole treatment, the tepid salt water bath, sponging with salt water, and brisk friction to the surface should be daily resorted to.

Various plans of support and of machinery have, at different times, been proposed to prevent the occurrence of distortion and deformity in the bones, and to remove it after it has taken place; we believe them all, however, to be worse than useless; indeed, every mechanieal means adopted to effect the former object, will be absolutely pernieious—invariably increasing the evil it was intended to avert. Those adopted to effect the second object, are generally unsuecessful, and are occasionally attended with mischievous effects. We are recommended, by very high authority, (Dupuytren,) to place children whose breasts have become wedge-shaped, from the effects of rickets, against a flat resisting surface, and then to press with the palm of the hand upon the projecting sternum, so as to flatten the thorax in its anterio-posterior diameter, and by increasing thus the convexity of the ribs, to augment its capacity laterally. In the success of such a proceedure, we have not the least confidence. We believe that much more may be effected by a course of well-regulated gymnastic exercises, eommenced with after the strength of the patient is well established, and he is sufficiently old to permit of their being put in practice. (Maunsell.) It will be evident to any one acquainted with the mechanism of the human frame, and the mechanical effects produced

upon it by the continued action of particular muscles, that modes of exercise could be easily devised, which, if repeated sufficiently often, would have a very powerful tendency to remedy many of the distor-

tions consequent upon rickets.

In scrophulous disease of the ends of the long bones, independently of the general treatment adapted alike to all cases of scrophulous disease, it is essential that the limb be kept in a state of perfect rest, which can scarcely be effected without the aid of appropriate splints and bandages;—although these, when the disease is seated in the bones of the lower extremities, will prevent the patient from taking exercise, they cannot be avoided. When inflammation takes place, this is to be removed by moderate local depletion in the commencement, aided by evaporating lotions, as a mixture of water and alcohol, or water and camphorated spirits, or a solution of the acetate of lead. In many cases, blisters, applied in the immediate neighbourhood of the affected joint, frictions with a solution of hydriodate of potassa, or with the ointment of the latter, (Manson, Gairdner, Zinck, Lugol, Pffiefer, Bayle,) or with the tartar emetic ointment, will often prove beneficial. It has been recommended to keep open the blister, by dressing it with the unguentum sabinæ, or other irritating applications, we are persuaded, however, that a frequent repetition of the blister is a far preferable practice. Purging will be found, in most instances, to be demanded by the torpid and loaded condition of the bowels; and, in general will produce, also, a good effect upon the the diseased condition of the joint.

So long as a disposition to suppuration continues, it is probable that blisters to, or in the neighbourhood of the joint, with the use of iodine internally, will constitute the most prudent and judicious practice. When the disposition to suppuration has subsided, gentle pressure upon the joint, by means of strips of soap-plaster, should be applied, and continued for some time. Motion of the joint must not be attempted so long as the least degree of irritation remains, or the slightest pain is excited. In all scrophulous diseases of the joints, motion should be delayed for a much longer period than in almost any other of the affections in which the bones of the extremities are implicated.

As soon as the limb becomes perfectly free from irritation, it is

necessary to subject it daily to gentle friction.

In the management of the scrophulous affections of the joints, the utmost patience, caution, and perseverence will, invariably be demanded; a too early desire to permit the natural use of the affected limb, may eventuate in complete anchylosis, or more serious injury; while, in even severe cases, by prudent and judicious management, a cure may sometimes be effected.

The treatment of white-swelling consists in perfect rest of the affected joint. When this is hot and painful, or tender upon being handled, leeches, lotions of a solution of the acetate of lead, or evaporating washes, brisk purgation, and light, unirritating diet will be demanded. When the swelling is indolent, presenting no increased heat, nor tenderness upon

pressure, blisters will, in general, be found the most efficacious application; though, in some cases, benefit has been derived from dry friction, or by friction with the iodine in solution, or in the form of ointment. Applying a blister first upon one side of the joint, and then upon the other, and thus repeated alternately until the pain and swelling are reduced, has, in many cases, been found more successful than when the blister is made to envelope the whole joint. (Latta.) When blistering induces an increase of heat and pain in the latter, an issue upon each side of the joint, may be substituted. In cases in which the parts involved in the swelling become infiltrated with matter, encircling the joint with strips of adhesive plaster, applied pretty tight, has been found in many cases, highly beneficial. (S. Cooper.) This practice is equally proper after abscesses or sinuses have formed.

In many patients a cautious use of opiates will be demanded, to relieve pain, and procure sleep at night, and in the latter stages of protracted and severe cases, to arrest the copious diarrhœa which then so generally prevails; in this latter case, they should be com-

bined with the acetate of lead.

Splints, in cases where the disease is seated in the knee, are necessary, as well to prevent motion, as to counteract the tendency which exists in these cases to permanent flexure of the joint; when the elbow joint is affected, and anchylosis cannot be prevented, angular splints should be applied, in order that the limb may become flexed so far as to render it as serviceable as possible to the patient.

The question of the propriety of amputation, in cases of whiteswelling, is a purely surgical one; its discussion does not fall within

the scope of the present treatise.

Hip disease—morbus coxarius. In relation to the special treatment of this affection, nearly the same remarks will apply, as in the case of white swelling. The most perfect rest of the affected joint is absolutely necessary to the accomplishment of a cure in any case; and this can only be maintained by a splint, so carved or modelled, as to fit accurately the side of the pelvis, as well as the thigh and leg of the side on which the disease exists:—such a splint, properly padded, while it prevents motion, produces no injurious pressure about the

joint, nor at any part of the limb.

Whenever there is much heat, pain, or tenderness, leeches will be proper, with the same cooling and evaporating lotions, directed in cases of white swelling. Some surgeons prefer cups to leeches; (S. Cooper;) in many cases, in the earlier stages of the complaint, previous to the soft parts about the joint becoming affected with any considerable amount of inflammation, we have been more pleased, certainly, with the effects of cupping, than with those derived from leeching; but, we have also been repeatedly called to cases, at a later stage of the complaint, in which, although local bleeding was demanded, the extreme tenderness of the diseased joint prevented the application of cups, and obliged us to resort to leeches.

In this affection, we know of no practice which will be found more

generally beneficial, than pretty active purging with the compound powder of jalap, as pursued by the late Dr. Physick. Under this treatment, with perfect rest of the limb, leeches, and cooling lotions, we have repeatedly seen the general health of the patient rapidly improve, and a perfect cure effected.

The diet of the patient, in the early stages, should be light and easy of digestion. Milk, with any of the farinaceous substances, or light

meat broths, in moderation, may be allowed.

Blisters are unquestionally useful in the early period of the disease. We prefer repeated blisters, to keeping up a discharging surface by stimulating ointments. In very chronic cases, a caustic issue, just before and below the great trochanter, will, probably, be more beneficial than blisters.

Frictions with iodine in the form of solution or ointment, in conjunction with its internal use, will often produce very happy results.

(Manson, Pffiefer, Bell, of Philadelphia.)

When suppuration is about to occur, or an abscess or abscesses have already formed, the effects of gentle, continued pressure may be tried. We think that in a few instances we have seen it beneficial.

When abscesses form, it is better to avoid, if possible, opening

them, lest we cause the cavity of the joint to become exposed.

In regard to general treatment, this is to be conducted upon precisely the same plan as in any other case of scrophulous disease.

Disease of the spine. Children of a delicate, enfeebled frame of body, particularly females, when approaching the period of puberty, are liable to curvature of the spine, entirely independent of disease of the vertebræ; though, when long-continued, disease of these, as well as of the intervertebral cartilages is very apt to take place. The species of curvature to which we now refer, is the result of a defect of power in the muscles by which the erect position of the trunk is maintained; and is often increased, if not produced, by improper articles of dress, which, by furnishing an artificial support to the upper part of the body, deprive the muscles of the trunk of their proper office, which, consequently, obey the general physiological law—that muscles disused diminish in bulk, and finally lose their power of act-Stays, corsets, and braces, produce this effect, under all circumstances, when worn during the period of youth, and, in too many instances, the mischief is increased by the undue pressure they exert upon the muscles and bony structure of the chest.

The general plan for giving increased vigour and tone to the whole system, by improving its nutrition, must be pursued in these cases; a loose style of dress must be adopted, and artificial supports of every kind abandoned. The power of the muscles about the spine and chest may be very materially increased, and even considerable curvatures of the spine removed, by a proper course of calisthenic exercises, daily practiced, and firmly persevered in. Such exercises as gradually accustom the patient to support the entire weight of the body by the arms, in climbing, swinging, and the like movements,

have a tendency to give development, strength, and activity to the muscles upon the chest, as well as to those of the back and spine concerned in maintaining the body in its erect position, while, at the same time, when carried on in the open air, they promote the general health of the system. Frictions with the hand or flesh-brush over the entire surface of the back, employed daily, as well as sponging with tepid salt-water, a well regulated diet, and daily general exercise, are

all important measures, which should never be neglected.

In the proper spinal disease, from an affection of one or more of the vertebræ, exercise either general or regulated, is out of the question; perfect rest in the recumbent position must be enjoined, and perseveringly maintained, until the disease of the bones is fully arrested. Various contrivances have been devised to take off the pressure of the head and upper portion of the trunk from the spine, when the patient is in the upright position, and by this means, to allow him to exercise his body by walking about. We confess that we have seen but little good result from these contrivances, and, in many cases, positive injury;—we prefer the recumbent posture, until the cure of the local disease is considerably advanced, when, probably, the machine invented for cases of diseased spine, by Dr. J. K. Mitchell, of Philadelphia, may be resorted to, for a short time daily, with advantage. From diseased vertebræ, a certain amount of augular curvature is inevitable; though, by a prudent and judicious course of treatment, early commenced with, we may be enabled to diminish, very materially, the extent of the deformity.

The great object of the practitioner in these cases should be, to give, as quickly as possible, increased tone and vigour to the whole system; for when this can be readily effected, the disease of the vertebræ is very generally arrested, and their complete consolidation produced. The morbid condition of the system is to be removed by a nourishing diet, friction of the surface, and the internal use of tonics;—the different preparations of iron, as, the carbonate, protocarbonate, ferrum tartarisatum, the tincture of the sesquichloride of iron, the iodide of iron, the hydrochloride of barytes, iodine, and the

sulphate of quinia, are to be preferred.

Iodine, externally and internally, has, unquestionably, in a large number of cases, been attended with the most happy effects; even when the disease of the bones has made considerable progress, the use of the iodine has appeared to arrest the disease, and allow anchylosis to take place. With the administration of iodine by the mouth, the diseased portion of the spine should be rubbed daily with the ointment or solution. (Manson, Pfliefer.) During the treatment, the bowels should be kept freely open by mild aperients. In the early stage of many cases of the disease, active purgatives, particularly the compound of jalap and bi-tartrate of potassa, will be found of advantage.

After all, however, we believe that the plan of treating the disease with caustic issues, formed along the spine, on each side of the diseased vertebræ, as originally recommended by Pott, should not be

neglected; we have unquestionably strong evidence in favour of its success. We have seen the most decided advantage result from it in numerous instances; and by resorting to it, we in no degree preclude ourselves from whatever advantages are to be derived from rest in the recumbent position, purgatives, the local application of iodine, or

its internal use either alone, or in conjunction with tonics.

The time necessary for the cure of diseased vertebræ is very various in different cases; in some, complete consolidation of the spine may take place at the end of a month or two; in others, not until after many months. In all cases it is important that the patient should not resume the upright position until we are certain that anchylosis has made considerable progress; nor should it be retained at first, for any length of time, and on no account should much active exercise be attempted: gradually, however, at first by the aid of crutches, subsequently without any support but that derived from a cane, and, finally, entirely without support, daily gentle exercise should be used; by this means the natural strength and movements of the muscles of

the lower limbs will be gradually regained.

In cases of tubercular depositions, the best that the physician has it in his power to do, is to endeavour to prevent their occurrence, by means adapted to restore health, strength, and vigour to every portion of the system; and when they have already formed, by the use and proper regulation of the same means, to endeavour to prevent their subsequent development, and the irritation produced by them in the tissues in which they are seated. Whatever symptoms are produced by them, when they are seated in the lungs or brain, must be treated upon general principles; always recollecting, however, that the particular constitutions in which tubercular depositions ordinarily take place, will not bear either depletion being carried to so great an extent, nor so restricted a diet, as many of the symptoms which arise, often would seem to demand, or which would be proper, were they to occur in other constitutions.

We have no means of positively judging of the presence of tubercles in the brain, and most of the other organs, during the lifetime of the patient: we may suspect their presence, however, whenever chronic and anomalous affections of any of the organs occur in individuals who exhibit a very strong predisposition to affections of a scroph-

ulous character.

PURULENT OPTHALMIA.

Opthalmia neonatorum—Infantile conjunctivitis.

The purulent opthalmia of infants commences, usually, within a few days after birth—generally between the third and seventh. We have seen it, however, upon the second, and occasionally, not until the third week. The first indication of the disease is generally, the eye-lids becoming glucd together during the night, with swelling and redness externally. When the lid is raised there occurs a gush of tears, and its conjunctiva is found to be uniformly red, and slightly thickened, and covered often with a somewhat tenaceous, transparent As the disease proceeds, the lids become more constantly agglutinated, and an increased secretion from the surface of the inflamed conjunctiva takes place, of a thick, purulent matter, a portion of which exudes from between the lids, but the greater part is retained, causing a considerable bulging of the palpebræ—the integuments of which assume a dark red huc. The child becomes fretful and uneasy, and manifests the utmost intolerance of light—keeping the eyes firmly and constantly closed, and averted from the light. The tumefaction and redness of the conjunctiva increases, and extends over the globe of the eye. Every separation of the eye-lids is attended with a gush of purulent matter, which sometimes is so copiously effused as to burst open the firmly-closed lids, and run down the cheek in large drops. The thickening of the conjunctiva becomes so considerable in the course of three or four days, as to rise up around the cornea, so as nearly to conceal it, or cause it to appear as if sunk deep into the eve.

The intumescence of the conjunctive causes it to become everted upon every attempt to examine the affected organ, or every time the child cries; not unfrequently, the constant pressure of the orbicularis

muscle renders the eversion permanent.

The discharge from the eye is generally of a pale straw colour; but sometimes of a deeper yellow; and, not unfrequently, it assumes a greenish hue; it is said, in some cases, to be ichorous, or mixed with blood. An ichorous state of the discharge we have never seen; but occasionally, have known it to be mixed with a small amount of blood.

A slight hazy condition of the cornea very generally occurs, and this may continue for a week or longer, without any permanent destruction of its transparency. About the tenth or twelfth days, sometimes later, purulent infiltration of the cornea, however, takes place; or, an interstitial deposit in the conjunctival layer or substance of the cornea. When purulent infiltration occurs, ulceration may ensue, either of the entire cornea, or of a small, circumscribed portion of it, giving

place to prolapsus of the humors, or of the iris only. When an interstitial deposit takes place, complete opacity of a part, or of the whole of the cornea may result, or a thin, bluish-grey film may form over its surface. When a considerable portion of the cornea is destroyed by ulceration, the humors of the eye ordinarily escape and the globe collapses.

There appears to be two forms of purulent opthalmia, as it occurs in children: one in which the inflammation is confined exclusively to the conjunctiva of the lids; another in which the conjunctiva of the eye-ball becomes equally involved in the disease. (Guthrie.) In the first, the disease is of a much milder character, and is seldom attended with any very serious injury to the eye; occasionally, however, the disease is equally severe in its symptoms, and protracted in its course as when the inflammation affects the whole of the conjunctiva. We have repeatedly seen the disease confined, for a number of days, to the palpebral conjunctiva, and then suddenly extend over the ball of the eye, and be quickly followed by infiltration and ulceration of the cornea.

In cases unattended with complete opacity or extensive ulceratio of the cornea, adhesion of the iris to the latter may take place; or an opaque spot, not larger than the head of a small pin, may be formed in the centre of the anterior hemisphere of the capsule of the lens.

Both eyes are generally attacked, either simultaneously, or within

a very short interval of each other.

The result, favourable or unfavourable, of infantile purulent opthalmia, will depend, pretty much, upon the greater or less violence of the attack, and the period at which the treatment is commenced. In its early stages, the disease is by no means difficult to cure; but in its advanced stages, it is seldom arrested, until more or less injury to the eye has taken place. So long as the cornea retains its transparency, there is a possibility of saving the eye; but when ulceration or purulent infiltration of the cornea has occurred, although the inflammation may still be removed, the sight is permanently destroyed. Opacity of the cornea, resulting from a thickening of its conjunctival covering, may disappear completely in the course of time, but that from superficial ulceration is generally permanent, and may interfere, to a greater or less extent, with vision. Protrusion and adhesions of the iris may impede or totally destroy vision, according to the part at which these occur; while the loss of vision resulting at first from central opacity of the capsule of the lens, may in time, with the enlargement of the pupil, which takes place with the growth of the child, disappear, in part; but permanent short-sightedness may remain. (Taylor.)

Not a little discrepancy of opinion has existed, and still exists, as to the cause of purulent opthalmia; by some the disease has been supposed to be of a specific character—an erysipelatous affection of the conjunctiva; (Saunders;) others believe it to be simple catarrhal

inflammation, occurring in children of unhealthy constitutions. (*Pfie-fer, Sickel.*) By the majority of authors, however, it is referred to some acrid or morbid matter secreted in the vagina of the mother,

and applied to the infant's eyes during birth. (Ryall.)

It is unquestionably true, that children born of mothers labouring under leucorrhea, are far more liable to be affected with purulent opthalmia after birth, than those born of women who are entirely free from disease; yet so many cases of the disease occur in the latter, that those physicians certainly err, who refer it invariably, to morbid vaginal discharges in the mother. During twelve months, three hundred and sixty women were delivered in the General Lying-in Hospital of Stockholm, and subtracting those of whom the children were deadborn, or died within a day or two after birth, of the remaining three hundred and twenty-eight, one hundred and forty-seven laboured under leucorrhæa, and the remaining one hundred and eighty-one were free from disease. Thirty of the children were affected with purulent opthalmia, namely, twenty of those whose mothers had the discharge, and ten of those whose mothers had none. these facts it would appear, that discharges from the genitals are extremely common among pregnant women; that women may labour under them without causing purulent opthalmia in their children; and that infants may be affected with this disease, notwithstanding their mothers have no discharge: it is evident, therefore, that the opthalmia is not necessarily produced by infection received from the mother. Nevertheless, when we consider that twenty out of the one hundred and forty-seven children born of mothers in whom a vaginal discharge existed, or about one in seven, suffered from opthalmia, while only ten in one hundred and eighty-one, or one in eighteen, of those whose mothers were unaffected, had the disease—the proportion of the former being nearly three times greater than the latter-we must conclude, that a discharge from the genitals of the mother, though not the sole cause of purulent opthalmia in new-born infants, is, at least, a very frequent one. (Cerderschjold.)

The disease is attributed by some to the too early and unguarded admission of light and heat to the eyes of the new born infant. We cannot say that we have been able to trace purulent opthalmia to this cause, though we admit that the practice, of placing an infant, as soon as it is born and day after day subsequently, before a bright fire, with perhaps a candle or lamp at no great distance, and keeping it there, not only during the time necessary for dressing or changing it, but frequently, long after this is completed, lying on its side, on the nurse's lap, with the face turned to the fire, is certainly one very

liable to produce injury to the eyes.

Impurities of the atmosphere, particularly smoke and other irritating vapours diffused in the air, are, no doubt, common causes of purulent opthalmia; cold and dampness may also produce it; and perhaps slight mechanical injuries of the conjunctiva. (Mackenzie.) Pur-

ulent opthalmia is a common affection of infants in alms' houses and children's asylums, where the inmates are crowded together, without sufficient attention being paid to cleanliness, and to the securing at all times, a due supply of fresh air; and, it is among the children of the miserably poor, by whom little care is taken in the hygienic management of their offspring, that, in private practice, we most frequently meet with the disease. Contaminated air, with its often associated morbific causes, neglect of cleanliness, defective nourishment, and want of sufficient exercise, is liable to produce a general tendency to disease, in the mucous tissues of children; the mouth, anus, and vulva, under such circumstances, being alike liable to affections terminating rapidly in gangrenous ulceration.

In cases of purulent opthalmia, it is said that the vagina is liable to be affected with a purulent discharge, precisely similar to that from

the conjunctiva. (Morrell.)

By some physicians, purulent opthalmia is supposed to be contagious; and numerous instances are referred to, in which the disease is said to have been communicated to the nurse, by the accidental application of the matter from the eye of the infant to hers. (Ryall.) Our "opportunities for observation on this subject have been tolerably extensive," but we have never met with such an occurrence. The disease occasionally occurs epidemically, generally, at periods when catarrhal affections prevail; being produced probably, by the same causes as

the latter. (Pfliefer, Sickel.)

After the first three or four days, there is always a very great difficulty in obtaining a view of the ball of the affected eye, particularly of the cornea, in consequence of the thickening and disposition to eversion of the conjunctiva; and the irritation produced by every attempt to force open the lids, sufficiently to enable the practitioner to ascertain distinctly the actual condition of the affected organ, has induced us to forego it entirely, and trust to "what information can be obtained from the external condition of the lids, and the nature of the discharge which issues from beneath them." (Taylor.) same time, however, we consider it absolutely necessary to open the lids once or twice a day, first sopping them well with a little warm water, or milk and water, so as to soften the matter which glues them together, in order to give discharge to the morbid secretion which accumulates behind them; an object which may be further promoted by the cautious injection of tepid water, or an infusion of pith of sassafras between the lids. The agglutination of the lids may be prevented, by covering the eyes, as the patient lies upon his back, with a small portion of soft linen rag, and dropping upon the inner canthus, occasionally, a little warm milk and water. (Mackintosh.)

In the commencement of mild cases, we have seen the disease very quickly arrested, in numerous instances, by warm fomentations, assidulously applied to the eye externally, and the occasional use of a wash formed of a strong infusion of common green tea, great attention being paid, at the same time, to the condition of the bowels. which are very generally deranged. They are occasionally constipated, when a grain or two of calomel, followed by castor oil, should be administered; much more frequently, however, there is a diarrhoa, with green, watery discharges; (Saunders;) in such cases, small doses of calomel, ipecacuanha, and magnesia, and the daily use of the warm bath, will be required. When, however, there is general and decided redness and swelling of the conjunctiva, or if the eyelids are much swollen, and red externally, local depletion by leeches, will be absolutely necessary; and if not resorted to sufficiently early, and carried to a proper extent, we may lose the only opportunity of saving the sight. The number of leeches—which should be applied as near as possible to the eye—will depend, altogether, upon the strength and vigour of the child, and their size; the best rule, perhaps, is to draw as much blood, in this manner, as will be sufficient to produce a slight paleness of the patient's skin. (Saunders.) If the first application has not been sufficient to arrest the inflammation, the leeches should be repeated after a short interval. The leeches should be followed by purgatives, of which the best is calomel, succeeded by castor oil; or, the combination of calomel and ipecacuanha, as directed above. By some practitioners, a combination of calomel and the pulvis antimonialis is considered peculiarly beneficial in this disease. There can be no doubt that in all cases, minute doses of calomel, repeated daily, will be productive of the best effects, and that their efficacy will be increased by the addition of either the ipecacuanha or antimonial powder. If this does not keep the bowels sufficiently open, an occasional dose of castor oil, or of magnesia and rhubarb may be given. If there be continued derangement of the alimentary canal, the spirits of turpentine, in small doses, by the mouth, or in the form of enema, will often be particularly serviceable. (Ryall.)

R.—Calomcl. gr. ij.
Pulv. ipecac. gr. ij.
Magnes. calc. gr. xxxvj.—M. f.
ch. No. xij.
One to be given every three or four hours.

bR.—Calomel. gr. iij.
Pulv. antimonial. gr. xij.—M. f.
chart. No. xij.
One to be given every three hours.

The patient should be kept in a dark, well-ventilated room; the eyes should be repeatedly fomented with warm water, a warm infusion of pith of sasafras, or of poppy heads, and the directions already given to keep the eyes free from the purulent discharge, constantly attended to.

After the violence of the inflammation is reduced, it has been directed to apply blisters to the temples or over the closed eyelids; the latter mode of applying them is certainly to be preferred, and we have occasionally seen the best effects derived from their use. In young children, particularly when of a weakly and debilitated consti-

tution, blisters must, however, be employed with the utmost caution,

as very dangerous consequences are apt to result from them.

At that particular period of the disease when alone blisters, if they are resorted to, should be applied—that is, after the intensity of the inflammation has been considerably mitigated by leeches, purgatives, emollient applications, and a general antiphlogistic regimen—lightly scarifying the thickened conjunctiva, the eye-lids being first carefully everted, and by this means procuring a free discharge of blood from its enlarged vessels, is considered by some, as among the most effectual means for the complete removal of the disease; (Mackintosh;) by others, however, it is condemned, as in all cases injurious; (Saunders;) in chronic cases, attended with very great vascularity of the conjunctiva, we have known scarification to prove of the utmost service;—we have never employed it, however, in the acute stage of the disease.

In purulent opthalmia, we must be content, most generally, to judge of the effects of our remedies upon the disease, partly by the diminution of the general symptoms, and the quietness of the infant, and partly by the reduced redness and tumefaction of the palpebræ, the diminished amount of the discharge, and by the child being able to open to a certain extent, and for a longer or shorter period, his eyes: but to determine, properly, this latter, it is necessary to watch the motions of the patient before light is admitted into the apartment; because the moment this takes place, the eyes will be closed, and he will forcibly resist their being opened. (Mackintosh.) When it can be done without inducing considerable pain, or an increase of irritation, it is always important that the state of the eye should be ascertained by

actual inspection.

By an early resort to the treatment just recommended, and by its judicious employment, we shall generally find, that about the third. fourth or fifth day of the attack, the pain, swelling and irritation of the eye, will begin very rapidly to subside; the discharge, at the same time, becoming much less in quantity, and of a thin, gleety nature, and the conjunctiva of a paler and more flabby appearance, but with its vessels still gorged with a considerable amount of blood. Mild astringent applications will now be proper. Various formulæ for these have been recommended by different practitioners; each one recommending his own as the best. Solutions of the acetate of zinc, or of lead, of the bi-chloride of mercury, of alum, or of the nitrate of silver, e may be employed; with either of the first three, the eyes should be bathed three or four times in the twenty-four hours, and a portion carefully injected into the eye. Previously, however, to their use, the lids should be gently everted and the discharge carefully and cautiously wiped from their inner surface, by means of a soft sponge, wrung out of warm water. The solution of nitrate of silver may be applied once daily, with a large hair pencil, over the whole of the inflamed conjunctiva; it may be used in conjunction with either of the other collyria.

*R.—Acctat. zinci, Əj.

Aquæ rosæ, Fiv.—M.

*R.—Acctat. plumbi, Əj.

Aquæ puræ, Fiv.—M.

*R.—Sulph. alumin. Əj.

Aq. puræ, Fiv.—M.

Aquæ puræ, 3iv.—M. Aq. puræ,

*R.—Nitrat. argent. gr. iv.

Aquæ, 3j.—M.

The chloride of lime, has been strongly recommended in the treatment of the purulent opthalmia of infants, and deserves a trial. (Varlez, Guthrie, Pfliefer, Eberle.)

R.—Chlorid. calcis, 9j.
Aquæ, 3j.—M.

The conjunctiva continues often, after the inflammation has been subdued, in a relaxed puffy condition; when a wash of a strong solution of zinc, or alum, may be used; or the conjunctiva may be touched daily with the vinous tincture of opium. When the membrane becomes soft, spongy and granular, the solid nitrate of silver, or the ointment, may be applied.

*R-Nitrat. argent. gr. x.
Axung. porcin. 3j.-M. (Guthrie.)

When ulceration or disorganization of the cornea is threatened, it is all important to support the patient's strength, by the use of tonics, which will also be proper after ulceration or disorganization has taken place. The most convenient tonic will be, the sulphate of quinia, which may be given in divided portions, to the amount of one, two or three grains daily, according to the extent of the exhaustion under which the patient labours.

It is all important, in every case of purulent opthalmia, and during the entire continuance of the disease, that the patient should enjoy a free, pure atmosphere; be defended from cold or damp, and from the influence of domestic and personal filth. He should be nourished at

the breast of a healthy nurse.

Although not convinced of the infectious character of the discharge from the eye in this disease, we think it proper, however, not to run any risks; and hence, the attendants should be cautioned against communicating the infection to themselves or others, by the accidental contact of the matter with their eyes, which may be easily prevented by the most scrupulous cleanliness.

SECTION VI.

DISEASES OF THE URINARY ORGANS.

1.—Dysuria—Painful and difficult micturition.

Infants and young children are not unfrequently affected with pain and difficulty in voiding urine. It is often observed, to a slight extent, as a symptom of any febrile excitement under which they may labour, but it is more frequent about the period of dentition. The ehild has a frequent desire to urinate, but passes a very small quantity at a time, and with evident distress and uneasiness. This may continue for a considerable time, and result, ultimately, in severe and dangerous disease. In some eases, the discharge of urine is attended with such severe paroxysms of pain, as to throw the ehild into violent agitation, and cause him to utter uninterrupted shrieks, until the discharge is eompleted, when the pain instantly eeases, and the ehild, if old enough, returns to his play as though nothing had occurred. Dysuria in children is very generally attended with a morbid condition of the urinary secretion; most commonly, the urine contains an excess of lithic acid, though, in some cases, it is highly charged with phosphatic sedimentous matter.

There is a form of dysuria which is of frequent occurrence in young infants, and always a source of intense suffering during its continuance, —if it do not, sooner or latter, terminate in a complete suppression of the urinary secretion; it is described by some of the continental writers, under the denomination of urodialysis neonatorum. (Schönlein, Jahn, Klose, Schmidt.) The urine is passed in very small quantities, often only a few drops at a time, and, evidently, with intense pain, as indicated by the sereams of the patient, the drawing up of his legs towards the abdomen, the flushing of the eountenance, and the general agitation of the whole body. The urine is always very high-eoloured, and stains the diaper or linen of the ehild, of a deep reddish, yellow, or orange hue. It produces an irritation or scalding of the surfaces over which it passes, and, finally, excites inflammation of the lining membrane of the bladder, and probably of the urethra also, as indicated by the mucus with which the urine that is passed becomes charged. The patient, usually, exhibits more or less febrile excitement;—the skin being increased in temperature, and dry, the thirst augmented, and the bowels constipated. When a discharge of fæees is obtained, these are eommonly in the form of small rounded masses, like marbles. The digestive function is invariably deranged; -the breath having a very decided acid odour. There is, generally,

considerable irritability of the skin; while inflammation and superficial ulceration, attended with a thin, acrid, feetid discharge, by which the mischief is extended to the neighbouring parts, is almost certain to occur, wherever two surfaces are in contact. Cutaneous eruptions, of various kinds, are very common; sometimes assuming the form of psydracious (impetiginous,) pustules, scattered over different parts of the body, and especially in the folds of the neck, axillæ, groins, &c., giving rise to superficial ulcerations of a very troublesome character. (Shönlein.)

All the more violent forms of dysuria, occurring in children, are, very generally, accompanied with more or less derangement of the digestive process, and the formation of acid in the alimentary canal. Severe attacks of the disease will, most commonly, be met with in those children who have been indulged, from an early period of infancy, in animal food, rich gravies, and similar highly azotized articles, and in whom, with imperfect digestion, there co-exists an insatiable appetite for food of a rich, stimulating quality; "Children that, according to the short-sighted estimate of their parents, are in the enjoyment of the most robust health, while, in fact, disease, already commenced, only awaits some trifling cause, to rouse it into more violent and rapid action." (Schmidt.)

There is no doubt that deranged digestion, and the consequent production of an excess of acid in the fluids of the body, giving rise to an increased secretion of lithic acid by the kidneys, and thus changing the normal constitution of the urine, may, during childhood and infancy, be the cause of a very considerable degree of irritation about the neck of the bladder—then easy to be excited, from the physiological condition, in early life, of the mucous tissue generally—attended by pain and difficulty in passing the urine; and that the urine will, in these cases, indicate by its physical properties, and the usual tests, a predominance of the acid in question. But this is not the only cause of painful and difficult micturition in children; in many cases, particularly in those which occur during dentition, or during slight febrile attacks, the disease is evidently the result of the increased irritability which the lining membrane of the bladder experiences, in common with the other mucous tissues, and, although the urine may, also, contain a slight excess of acidity, this is in too small a quantity to produce the degree of dysuria experienced, without the former. Various intestinal irritations, are an occasional cause of difficult and painful micturition in young children; we have seen it often connected with the presence of oxyures in the rectum; in these cases, the urine generally forms deposits of an alkaline character. We have known an ordinary attack of dysentery in a child, to be accompanied with severe dysuria.

In a few cases, we have had reason to believe that the dysuria depended upon a degree of inflammation, about the neck of the bladder; the urine, in these cases, notwithstanding the calls to void it were very frequent, was passed in very small quantities, and loaded with mucus;

-partial retention of urine is common in such cases.

In female children, a very common cause, and one very often overlooked, of dysuria is, an inflamed condition of the orifice of the urethra. (Eberle.) This is often red, swollen, and so extremely sensible, that it cannot be even lightly touched, without causing the child to shrink, and shrick with pain. In cases of this kind, the urine presents nothing abnormal, and the pain, accompanied by considerable smarting, remains for some short time after the discharge of urine has ceased. We have met with this state of the female urethra so frequently, that we are never called to a case of dysuria, occurring in a girl, without making an examination.

There does not appear to be any source of difficulty in the diagnosis of dysuria. Even in the youngest child, its symptoms are sufficiently evident, to prevent the disease from being mistaken for almost any other; and yet we have known it to be confounded with colic, and treated for several days accordingly; if, however, a child is found to become affected with spells of severe suffering, only during the period it is voiding its urine, the pain commencing and ceasing with the latter, the true cause of the paroxysms is at once pointed out.

Happily, in the majority of cases, the remote and exciting causes of dysuria are only of temporary duration, and, hence, the affection is seldom productive of any very serious or permanent injury. When, however, the disease is connected with long-continued disturbance of the assimilative process, it may produce disease of the kidneys, ureters, or bladder, giving rise to a complete suppression of urine, or be the

cause of gravelly or calculus concretions.

Gravel, in children, is of more frequent occurrence than is generally suspected; and, when formed in the pelvis of the kidney, its occasional passage through the ureters, is attended with sudden, intense attacks of pain, which continue until the particle of gravel has found its way into the bladder; these attacks, the cause of which is at first not very evident, may give rise to convulsions; occasionally the urine voided immediately after the eessation of the

pain, is slightly bloody.

In the treatment of dysuria, we must be governed by the peculiar character of each case. When dependent upon disordered assimilation, it is important to employ such means as are calculated to render the digestive process more prompt and regular; previous to weaning, the breast-milk of a healthy nurse, pure air, the warm bath daily, followed by friction to the surface, will, in general effect this; in older children, beef tea, or chieken water, should constitute pretty much their ordinary diet, and all articles of a saccharine and ascesent kind should be entirely prohibited; at the same time, daily exercise should be taken in the open air, cold and dampness carefully guarded against, and the functions of the skin promoted and maintained by the tepid bath and friction.

In all cases, the bowels should be, at once, freely evacuated by

sufficient doses of magnesia and rhubarb, aided by emollient enemata, and their regular action, subsequently maintained, by small doses of calomel, magnesia and ipecacuanha, with or without the addition of extract of hyosciamus, repeated once, twice or thrice a day, as may be necessary. When there is a strong tendency to acidity of the stomach and bowels, the best prescription will be, either magnesia and milk, in small, frequently repeated doses, or, what is calculated in these cases, to produce the greatest amount of benefit, the bi-carbonate of soda. This may be given in doses of from two to six grains, according to the age of the child, once, twice, or thrice daily. It should be dissolved in about half a drachm of a weak infusion of calomba, or chamomile, and then diluted with barley, rice, or gum water.

*R.—Calomel, gr. vj.—xij.
Pulv. ipceac. gr. iij.
Magnes. calc. gr. xxxvj.
Ext. hyosciami, gr. iv.—vj.—M. f. ch. No. xij.

When dysuria occurs during dentition, the state of the gums should be carefully watched, and inflammation, distension, and pain of these promptly removed, by free incision, repeated daily, if necessary; the bowels should be kept freely open, by occasional doses of magnesia and rhubarb, and, if any febrile excitement exists, as it generally does, the daily use of the tepid bath, and, internally, the acetate of ammonia, with the addition of a small quantity of the sweet spirits of nitre.

During the paroxysms of pain, should they be of any continuance, the best means of alleviation is the hip bath, used tolerably warm, and, internally, a few drops of turpentine, sweet spirits of nitre, and the camphorated tincture of opium, in combination. In ordinary cases, however, the duration of the paroxysms is too short, to allow time for the preparation of the bath, we must content ourselves, therefore, with the administration of the latter.

*R.—Aq. einnamon, Jij.
Spir. terebenth. Jjss.
Magnes. calc. gr. viij.
Spir. æth. nitr. Jij.
Tinet. opii camph. Jij.—M.

When dysuria is attended with a copious secretion of the phosphate of magnesia and ammonia, with pale or light-coloured urine, which deposits, upon cooling, a whitish or yellowish sediment, and becomes rapidly putrid when suffered to remain at rest, the diet of the child, if weaned, should be mild, but nutritious, but taken in moderate quantities, so as not to endanger the overloading of the stomach, or the disturbance of its functions; in addition to milk, and the usual farinaceous preparations, the child may, with propriety, be allowed a moderate portion, daily, of beef, mutton, venison, chicken, turkey, or any other meat of easy digestion,—which should be fresh, not too fat,

and plainly cooked, without much seasoning. For drink, we may direct weak lemonade, or water sweetened with the acidulous lemon syrup.

The bowels, in these cases, are generally irregular, and the functions of the entire alimentary canal, more or less deranged. To remove this, the bowels should be freely evacuated with rhubarb, castor oil, and turpentine, or the compound infusion of senna, and kept freely open by the occasional use of the latter, or by mild purgative enemata.

To allay the general irritability of the system, by which this form of dysuria is generally accompanied, either the Dover's powder, in small doses, or a combination of ipecacuanha, and extract of hyosci-

amus, will, very frequently, be found beneficial.

aR.—Pulv. Doveri, gr. vj. Pulv. valerian, gr. xij.—M. f. ch. No. xij. (Eberle.) Of these, one may be given every six hours, to a child between two and five years of bR—Pulv. ipecac. gr. iij.
Ext. hyosciami, gr. iv.—vi.—M. f. ch.
No. xij.
One every three hours.

After the bowels have become regular, and their discharges natural, benefit may be derived from the administration of the tincture of the sesquichloride of iron, in small doses, or of the protocarbonate of iron.

Daily exercise in the open air, the tepid bath, and frictions to the surface, are all important measures, and should never be neglected.

All alkaline substances are improper.

When dysuria appears to be dependent upon a morbid degree of irritability in the lining membrane of the bladder, the condition of the urine being normal, or very nearly so; the treatment should consist of a mild unirritating diet, the use of the warm or tepid bath daily, and the plentiful use of diluents, of a mucilaginous character. The freedom of the bowels should be maintained, by occasional doses of castor oil, or by laxative enemata; and, if there is nothing present to forbid its use, a dose, adapted to the age of the patient, of Dover's powder may be given at night, or the extract of hyosciamus and ipecacuanha, as directed above, three or four times a day. A weak infusion of the seeds of wild carrot, or of the root of parsley, mixed with an equal portion of the mucilage of the inner bark of the slippery elm, has been found, in some of these cases, peculiarly beneficial. Very active exercise will not be proper; but a short walk, or ride in a carriage, should be taken every day, when the weather is dry, and sufficiently mild. In this, as well as in all the other forms of dysuria, it is important to defend the surface against cold and damp, and hence, the importance of flannel being worn next the skin.

*R.—Sem. dauc. earotæ, Zij.
Aq. bullient, Zviij.—M.

Or R.—Rad. apii petroselini, Jij.

Aquæ bullient, Jviij.

Let stand until cold, then strain, and add
half a pint of the mucilage.

When dysuria is connected with inflammation of the neck of the

bladder, a leech or two may be applied to the perineum; the bowels should be kept freely open, by the mildest laxative enemata, and the warm hip bath should be used every evening; in other respects, the treatment differs in nothing from that directed for irritability of the bladder.

In the cases of painful micturition occurring in female children, from inflammation of the orifice of the urethra, we have frequently found speedy relief to be derived from washing the part, three times a day, with a solution of acetate of lead, keeping the bowels freely open, by mild laxatives, putting the patient upon a mild unirritating diet, and using the warm or tepid bath daily. Covering the inflamed part well, with perfectly fresh lard, or spermaceti ointment, by protecting it from the contact of the urine, will often enable the inflammation to heal, if it be of a simple crythematous or phlegmonous character.

Some prefer, as a wash, a strong solution of the sub-borate of soda. (Eberle.) In some cases, there exists a slight pustular cruption around the orifice of the urethra, often occupying the whole of the fossæ in which the urethral orifice is situated; in these cases, the diluted citrine ointment, will seldom fail to effect a speedy cure.

aR.—Ungt. nitrat. hydrarg. 3j. Axung. porcin. 3j.—M.

In every case in which there occurs dysuria, or any other symptom, most generally connected with a change in the composition of the urinary secretion, it is all-important to pay strict attention to the condition of the urine voided, and to ascertain with accuracy its prevailing character, and according as this indicates an excess of the lithic acid, or of phosphatic matter, to direct such a course of treatment, as will be calculated to arrest the secretion of either. By these means, perseveringly carried out, the formation of stone in the bladder, may be almost certainly prevented; while, by their neglect, or the careless manner in which they are pursued, the child may be subjected, even before he attains to adult age, to all the pain and suffering attendant upon calculus formations. (*Prout.*)

2.—Anuria—Suppression of Urinc.

The kidneys perform their secretive function previously to birth; and, very generally, the moment the child is born, or, at least, within a very few hours subsequently, a discharge of a pale coloured, inodorous urine takes place from the bladder; it is by no means uncommon, however, for six, twelve, twenty-four, thirty-six, and even forty-eight hours, to elapse, before the infant passes any water. In these cases, it is reasonable to suppose, that the function of the kidney has not been established; the infant exhibits no uneasiness whatever that can be referred to this cause; and the discharge, when it occurs, generally

goes on regularly. The physician need give himself little uneasincss, in consequence of the child's not urinating for the first twelve hours after birth; if the discharge does not then take place, however, it will be proper, in the generality of cases, to attempt to excite the action of the kidneys by some simple means. The bowels should be freely evacuated, by means of castor oil, or laxative enemata, the child should be immersed to the hips in the warm bath, and a few drops of the sweet spirits of nitre, may be given every half hour, in a dessert spoonful of the infusion of parsley root, or wild carrot seed. When these simple means fail, we confess, that we have seldom seen any good result from those of a more active character. We are recommended, however, to employ frictions, over the loins and hypogastric region, with warm vinegar of squills, or a mixture of juniper oil, and sweet oil, or with the expressed juice of onions, diluted with water; and, internally, to exhibit a few drops of the vinegar of squill, a drop of spirits of turpentine, in a tea spoonful of milk, or four or five drops of the expressed juice of roasted onions, every thirty or forty minutes; in conjunction with warm bathing, laxatives, and, if necessary, laxative enemata. (Eberle.)

So long as the child exhibits no unusual drowsiness, or restlessness, there is a possibility of the kidneys commencing their secretory function, and the child doing well. We have repeatedly known the urinary discharge to be suspended, for upwards of twenty-four hours.

without the least injury resulting.

In some cases, however, the suppression of the urinary discharge in young infants, is the result of congenital malformation of the kidneys, ureters, or bladder, or a disorganization of the kidneys from intra-uterine disease. Absence of the kidneys, ureters, or bladder, though of very rare occurrence, has been occasionally observed; occlusion of the ureters, or of the urethra, is more common, and many cases are related, in which, at birth, there was softening of the kidneys, or the pelves were entirely filled with calculous concretions; or the kidneys were converted into cysts, or filled with hydatids. (Morgagni, Grötzer, Ivanove, Ochler, Moreau, Fleishman, Orfila, Howship, Brodie, Kennedy, Billard, Lee, Wilson.) The absence of the urinary secretion has, in many cases, been dependent upon congenital disease of the spinal marrow. (Flössman, Schwam.) We have met with one or more of these cases.

When the suppression of the urine is dependent on malformation, extensive disease, or disorganization of the kidneys, or of the urinary organs generally, of course nothing can be done for the relief of the patient, who seldom survives more than a day or two; he quickly falls into a state of stupor, which sooner or latter terminates in death.

In the case of imperforate urethra, when early detected, the life of the

patient may be occasionally saved by an operation.

Anuria may occur at any period during infancy and childhood, from disease of the kidneys. In many of their acute febrile affections, the secretion of urine is very considerably diminished, or, for a time,

entirely suspended; complete anuria, is a common symptom of the latter stages of hydrocephalus, as well as of other affections of the brain, or spinal marrow. In such instances, of course, the reinstatement of the function of the kidneys, is dependent upon the reduction or removal of the disease with which it is connected.

In a very interesting case of suppression of the urinary discharge in a child, in which the *anuria* was preceded by diarrhæa, apthæ of the mouth, eough, strabismus, stupor, and convulsions, the kidneys were found upon dissection, to be very vascular, the papillæ projected through the infundibula, and were of a bright red colour, while the pelves and ureters contained a quantity of sabulous matter and tenacious mucus. (Fosbroke.)

3.—Ischuria.—Retention of Urinc.

In ischuria, the urine is regularly secreted by the kidneys, and conveyed into the bladder, but its discharge being prevented by some affection of the latter organ, or of the urethra, it accumulates in the bladder, causing a great distention of the latter, and other very serious,

and often painful, consequences.

Complete or partial retention of the urine may occur in the new born infant, in consequence of an obstruction existing at the neck of the bladder, or, in the course of the urethra, from inspissated mucus. This species of retention is said to be very common; but we should not infer it to be so from our own experience, having met with but one or two cases of it, in twenty-eight years' practice as an obstetrician. A much more common cause of retention in new-born infants, results from occlusion of the urethra, either by a thin, semi-transparent membrane, situated at its oritice, or a short distance within it, or by an adhesion of the lips of the external orifice. In some cases, the retention is caused by a complete closure of the prepuce. In other eases, the cause of retention has appeared to be, a spasmodie contraction of the bulb of the urethra.

In cases of ischuria in the new-born infant, as the urine gradually accumulates in the bladder, this becomes more and more distended, and may, at length, be distinctly felt, forming a circumscribed tumor above the pubes. The infant very soon exhibits indications of more or less pain and distress, which is increased by pressure upon the hypogastrium; the little patient becomes very restless and fretful, his countenance has an expression of suffering, and his legs are constantly drawn up towards the abdomen; while the latter, if the impediment to the discharge of urine be not removed, becomes often enormously distended, and the skin covering it, acquires a smooth shining appearance, as in cases of ascites; the superficial veins being, at the same time, greatly enlarged and gorged with blood. If the accumulation within the bladder, be allowed to go on, rupture of the latter may, sooner or latter, take place, and quickly destroy the patient; or the urine, after enormously distending the bladder, may accumulate within, and produce distention of the ureters, and, finally, of the pelves of the kidneys. (Billard, Howship, Ivanove, Brodie, Kennedy, Thurman, Moreau, Walsh.) In some of these cases, the kidney itself becomes expanded into a kind of cyst, filled with urine. Inflammation of the peritoneum, effusion into the cavities of the brain, and other serious consequences, may result from irremediable obstructions to the discharge of the urine—altogether independent of rupture of the bladder, which we have not found to be a very common occurrence.

It is surprising to what an extent, in some of these cases, the bladder will become distended; it has been found to fill the whole cavity of the abdomen, (Billard,) and to contain from eight to twenty ounces of urine, sometimes mixed with mucous or albuminous flocculi. (Howship, Parrish.) The wreters have, in some cases, been so far dilated as to present a diameter of from half an inch to one or more inches.

(Kennedy, Webster, Thurman, Sandifort.)

In all cases of ischuria, in which a permanent and irremediable obstruction to the exit of the urine from the bladder exists, death must, necessarily, sooner or later, take place. In those, however, depending upon occlusion of the external orifice of the urethra, or the want of an opening in the prepuce, the obstruction may be very readily

remedied by a very simple operation.

In every instance in which a new-born infant is found not to have an evacuation of urine within twelve hours, at the furthest or sooner, if any indications of pain or distress exist—the physician should make a cautious examination of the urethra, by the careful introduction of a small bougie, by which any obstruction in the urethra will at once be detected; and if this result from inspissated mucus, will at the same time remove it; or, if the urethra is found to be pervious, and the introduction of the bougie is not followed by a flow of urine, with the utmost caution, a small flexible catheter may be passed into the bladder—for there is reason to believe, that, in some instances, the retention is caused by a spasmodic action of the membranous portion of the urethra, or, when the bladder has been allowed to become greatly distended, that its contractile power may become temporarily impaired; in this latter case, it will, in general, be prudent to pass the catheter daily, until it is found that the bladder has regained sufficient power to completely evacuate itself without artificial assistance, and no tendency to re-accumulation remains.

Whenever, in cases of retention of urine occurring in infants, no obstruction to the exit of the urine can be detected, in the urethra, or at the neck of the bladder, the bowels of the patient should be freely opened by purgative enemata, after which he should be immersed to the hips in a warm bath; and, at the same time, gentle friction may be made over the pubic region with the hand, or with a little camphorated oil. This will often be sufficient to procure the discharge of urine, especially should it happen to depend upon a spasmodic affection of those muscles of the urethra, which act as a sphincter vesice.

During the whole of infancy, and the earlier period of childhood, suppression of urine is liable to occur from this latter cause;—the ina-

bility to evacuate the bladder occurs suddenly after exposure to cold, or, more commonly, it results from some irritation seated in the rectum, as oxyures, or other worms; in these cases, the warm bath, an active cathartic, as castor oil or infusion of senna, followed by an anodyne injection and frictions over the perineum with camphorated oil, with the addition of a very small portion of extract of belladonna, will be the proper treatment. We have met with a number of cases of suppression of urine in children, about the period of dentition, arising evidently from this cause; and the practice detailed was always productive of prompt and entire relief.

Occasionally, retention of urine in children results from an inflammation of the neck of the bladder; when this is the case, leeches to the perineum, emollient and laxative enemata, the hip bath, and small doses of Dover's powder and ipecacuanha, or of extract of hyosciamus and ipecacuanha, are the remedies indicated;—if by these means the ischuria is not quickly relieved, the urine must be drawn

off by the cautious introduction of a small catheter.

It is scarcely necessary to say, that all remedies, that act directly upon the kidneys, are improper in cases of retention of urine; they augment the distress and danger of the patient, by increasing the amount of fluid secreted, and consequently the distension of the bladder.

Under ordinary circumstances, there is scarcely a possibility for any mistake being made in the diagnosis of ischuria; nevertheless, when the obstruction to the discharge from the bladder is only partial, after the latter has become distended to a certain extent, small portions of urine are, occasionally, evacuated, notwithstanding, a constantly increasing accumulation is, in fact, taking place; and, unless the physician makes, himself, an examination of the condition of the bladder, he will be very liable to be deceived by the report of the mother or nurse, and attribute the evident suffering of the patient, to other causes. Cases have actually occurred, in which the bladder was finally ruptured by over-distension, and death ensued from peritoneal inflammation, when relief might have been afforded, had a retention of urine been suspected to exist; (Groeb, Wishart;) a small discharge from the bladder deceived the attendants, and by incautiously depending upon their report, the physician was led to form a very erroneous, and unhappily fatal diagnosis.

Whenever we are called to a young infant, who is restless and fretful, and persists in keeping its legs drawn up towards its abdomen, we are scarcely free from censure if, notwithstanding the assurances of those about it, that it passes its urine regularly, we neglect to make a cautious examination of the abdomen, by which, if retention of urine

exists, the fact may be readily detected.

4.—Enurisis.—Incontinency of Urine.

In early infancy, the discharge of the urine, as well as of the fæces,

takes place involuntarily; as the infant, however, increases in age, and soon after it assumes the erect position and has learned to walk alone, with a very little precaution, it will acquire a command over the sphincters of the rectum and bladder, and be able to retain the contents of either, until a proper place and opportunity is offered for their evacuation. Children, whose parents have neglected to teach them regular and cleanly habits in regard to their evacuations, will often, even after they have attained two or three years of age, void their urine and fæces the moment the desire is felt; and what at first resulted from mere inattention to restrain, under any circumstances, the natural calls, will at length degenerate into a partial loss of the controlling power of the will over the sphincters of the rectum or bladder-more particularly over the latter-and the children finally may become affected with real incontinence of urine. Happily, however, a sense of deceney, which children early acquire, the ridicule of companions, or other influences, prevent this latter occurrence, excepting under very particular circumstances.

Still incontinence is of very common occurrence among children, of all ages, even up to the period of puberty, and sometimes until late in life. (Prout.) In some cases, it evidently originates from paralysis of those muscles, by which the expulsive action of the bladder is resisted; or perhaps from paralysis also, of the bladder; in these cases, of which we have seen many, the urine dribbles away constantly, being discharged, guttatim, as it reaches the bladder. Some of the patients thus affected, passed from under our notice; some survived until their fourteenth, sixteenth, and eighteenth years, and then died of other diseases, -in the majority of cases, of a tubercular character, while others became early affected with paralysis, hemiphlegia, or paraphlegia; and when they died, exhibited extensive lesions of the brain or spinal marrow; one died with all the symptoms of genuine tetanus, more probably, however, the result of an overdose of struck-

nia, exhibited by an empiric of the homopathic school.

But the most common form of incontinence of urine, is that which presents itself in a discharge of urine at night, while the patient is asleep in bed. There are few young children, who, during the intense nocturnal slumber peculiar to their age of life, do not occasion. ally pass their urine in bed, particularly if care has not been taken to cause them to urinate, just before going to sleep; or, if they have been indulged in the use of tea or other fluids, late in the evening. But this does not constitute a case of incontinence, properly speaking, though it may become so by neglect. Children affected with enurisis, at first occasionally, but very soon habitually, and, very generally, at a particular hour of the night or morning, discharge their urine whilst asleep. It is not true, however, that incontinence of urine occurs only during sleep: not only are the calls to urinate more frequent and pressing than in health, at all times, but the urine is always more copious, and of lower specific gravity; it very rarely contains the due proportion of characteristic animal ingredients, but is colourless and watery. (Willis.) This is unquestionably true in the majority of cases of enurisis in children; it is not, however, invariably so; in numerous instances, the urine contains an excess of sedimentitious matter, particularly lithic acid and its compounds, which impart to it an aerid and irritating character. (Prout.) The patient has, at all times, frequent calls to pass his urine, and is unable to retain it for any time after the desire is experienced.

It is probable that the discharge, during sleep, in many cases, particularly when it has become habitual, is entirely involuntary, and takes place even without the patient being conscious of the act: in numerous instances, however, there is no doubt that the discharge is a voluntary effort, excited by a lively dream; (Prout;) the dream being prompted either by the distension of the bladder, or the stimulating

properties of the urine.

It has been said, that a discharge of urine never takes place during sleep, excepting when the individual is lying on his back; the urine, in this position, gravitating in such a direction, as to press directly upon the "sensible spot—the master spring" of the museles of the bladder, "situated a little behind and below its orifice." (Charles Bell.) This statement is by no means correct; from personal observations, made under circumstances peculiarly favourable for arriving at correct conclusions, we know, as remarked by a late judicious writer on urinary diseases, (Willis,) that children affected with nocturnal incontinence of urine, pass their water sleeping in every position, probably even more frequently when they happen to be lying on their face, than in any other posture. Whoever, therefore, trusts to position alone for the cure of incontinence of urine in children, will be sure to be disappointed.

That the affection, whatever may have originated it, is very commonly continued and confirmed by habit, is proved by the fact, that by watching the patient, to ascertain the particular hour at which the discharge takes place, and waking him just before it arrives to enable him to evacuate his bladder, he will in a very short time either awake of himself, and thus the wetting of the bed be prevented, or he will acquire, in time, the power of retaining his urine during the entire

night.

Though a trifling malady in itself, so far as the general health of the individual is concerned, it is often one of serious importance, from the physical suffering and moral misery it occasions, when the child arrives at an age capable of experiencing the shame so generally attached to his infirmity, and the desire to shrink from the scorn and ridicule heaped upon him for what he had as little agency in the production of, as he has of power to prevent its continuance. Boys have been known, who had been beaten unmercifully for wetting the bed, to sleep, or rather pass the night in their clothes on the floor, or in a chair, for several nights afterwards, till, worn out with fatigue, they found themselves compelled to undress, and take natural rest; hoping, as they had escaped one or two nights, passed between sleeping and waking,

they might possibly get through another, and yet sleep soundly. But in vain: the very first night, after betaking themselves to their bed, they were as unfortunate as ever; and then came the renewed beating, and, far worse to bear, the ridicule and scoffing of companions, or the other members of the family. (Willis.) It is the duty of physicians to point out, on every proper occasion, the serious consequences which such improper and cruel means, originating in an entire misconception of the nature of the complaint, are capable of producing.

It is curious, that in relation to an affection of every-day occurrence, so great a difference should exist as to the sex in which it is most commonly observed; thus by one it is said to occur only in boys; (Wardrop;) by another, that girls are more subject to it than boys; (Steward;) while another affirms that it is equally common in children of both sexes. (Millar.) Now the fact is, that neither sex is exempt from its occurrence, although it is certainly far more frequent

in the male than in the female.

In regard to the treatment of nocturnal enurisis in children, we believe the general want of success that has attended the various plans that have been proposed for its cure, has arisen from an entire mistake in regard to the true nature of the disease, and from the remedies being directed to remove some supposed morbid condition of the bladder, which seldom or ever exists. Our own observation has taught us the entire correctness of the views of those writers, who refer the disease, primarily, to a derangement of the digestive and assimilative organs, and a consequent morbid change in the constitution of the urine. (Wardrop, Prout, Willis, Hall.) We have seldom seen a case of nocturnal incontinence of urine, without its being accompanied by more or less derangement of the digestive organs; and have very generally found, that when this is removed, the involuntary discharge of urine ceases. In those cases in which the urine contains an evident excess of lithic acid, the course of treatment directed, under similar circumstances, for the cure of dysuria, will be equally proper here; daily exercise in a pure, dry air; avoidance of cold and dampness; a diet composed of a moderate portion of plainly-cooked beef, mutton, or chicken, with the least ascescent of the farinaceous preparations, and the daily use of the warm or tepid bath, with friction to the surface, and a prudent use of alkaline carbonates, as magnesia, the bi-carbonate of soda, or the carbonate of potassa, with light bitters and tonics; a gentle purgative and well-directed alterative course, will in most cases be found sufficient to improve the condition of the digestive organs, as well as of the urinary secretion; and as these changes take place, the involuntary discharge of urine during sleep will become less frequent, and finally cease entirely.

When the condition of the urine is that pointed out by Willis—namely, pale and watery, of diminished specific gravity, and deficient in its usual animal ingredients, the same attention should be directed to restore the healthy function of the digestive organs, and bring back the urinary secretion to its normal state. Any light, bitter infusion, acid-

ulated with hydrochloric acid, with the addition of a very small proportion of the tincture of opium, will be found a useful remedy in these cases; or we may administer a couple of table-spoonsful of the concentrated decoction of uva ursi, with the addition of ten drops of the tincture of the sesquichloride of iron, two or three times a day. (Willis.) The dose here directed of the latter remedy, is adapted to a child of five or six years of age; but a younger patient will seldom bear more than a tea-spoonful at a time of the decoction, and from three to five drops of the tincture of the sesquichloride of iron, which may be repeated, if necessary, three times in the course of the day. Cold, or in very young and delicate children, repeated tepid sponging of the perineum and pubes, has been found beneficial in some cases. In others, a blister to the sacrum has succeeded in relieving the complaint; (Willis;) we have used the blister frequently, occasionally with complete success; in others, with no advantage whatever.

Children, as a general rule, but more especially when affected with nocturnal incontinence of urine, should not be allowed to partake of large quantities of fluid, either as drink or food, in the latter part of the afternoon and evening. They should be prohibited from the use of tea, or, indeed, any kind of food, a short time before retiring to rest. The caution should be observed to cause them to evacuate the bladder just before being put to bed; and to wake them for this purpose

at regular intervals during the night.

Cases, however, occasionally occur, in which every means employed is productive of no permanent benefit. In these obstinate cases, it has been supposed that the infirmity could be traced to a hereditary deficiency of control over the sphincters of the bladder at any time, the children wetting themselves whenever sharply spoken to, or frightened:—we have met with such cases in children of an eminently nervous constitution. But the most obstinate cases have appeared to us to occur in very profound sleepers, and to be kept up by the bladder having acquired a confirmed habit of evacuating its contents at a particular hour. The bladder may acquire this habit, so that, even in the day-time, when the patient is perfectly awake, he finds the utmost difficulty to retain his urine beyond the particular period when its discharge has been accustomed to take place.

In these cases it is that the exhibition of the tincture of cantharides will be found beneficial; by the irritation it produces about the neck of the bladder, the moment the urine begins to flow, a degree of stranguary occurs, sufficient to awaken the person, and prevent the evacuation taking place in the bed. This effect being repeated for several nights in succession, the habit upon which the involuntary discharge takes place, is entirely broken up, or the patient will become accustomed to awake when the desire to urinate occurs, and thus all the disagreeable consequences resulting from his unfortunate infirmity, be prevented. From three or six, to ten or fifteen drops of the tincture of cantharides, according to the age of the child, may be given three times in the course of the day, and the dose should be gradually increased, until

a degree of stranguary is experienced in voiding the urine. The moment this effect is produced, the medicine should be given only in small occasional doses, so as to keep up, for a few nights, a slight degree of irritation at the neck of the bladder. Of course, the employment of the cantharides is proper only in protracted cases, unconnected with derangement of the digestive organs, and a morbid state of the urinary secretion. Should too violent a degree of strangury ensue, it may be abated by the free use of emollient enemata and mild mucilaginous drinks, small doses of camphor in the form of emulsion, and the warm hip bath. If these means are not immediately successful, an anodyne enema may be given.

The employment of strychnine has been recommended in cases of enurisis occurring in children. (Moudiere, Cherchiare, Lendrich, Schnatz.) Upon what principle it is supposed to prove beneficial, we are mable to conceive; we have given it a trial, but found it, when administered in very small doses, to do no good; and when given in larger doses, its effects upon the nervous system have been

too violent to warrant a continuance in its use.

When every thing else fails, we may resort, in the male, to mechanical contrivances for compressing the urethra, and thus prevent the escape of the urine. The best is that in which a firm, but not hard pad, is kept applied by means of a spring to the membranous portion of the urethra. (Willis.) This should not, however, be permitted to be worn habitually; it may be used, occasionally, with perhaps considerable benefit; and when children are visiting from home, will insure from the shame and mortification incident to this infirmity. Ligatures to the penis, or the use of jugums, should never be permitted, as much mischief is liable to result from them.

In not a few instances, incontinence of urine is kept up by the irritation of the oxyures worm in the rectum; when this is the case, an enema of aloes or assafætida, dissolved in milk, or of turpentine diffused in mucilage, will destroy the worms, and a well-regulated diet, exercise, the warm or tepid bath, and frictions to the skin will, in general, tend to prevent their return. Should, however, the rectum become again infested with them, a repetition of similar enemata

should not be neglected.

5.-Diabetes.

There can be no doubt that children are frequently affected with a species of hyperurisis, in which the urine discharged differs but little in its sensible qualities from common water, being perfectly limpid, entirely colourless, with scarcely any odour, and after standing for ten or twelve hours, becoming slightly opalescent or milky. (Willis.) This affection usually occurs in children of debilitated constitutions, emaciated, or quickly becoming emaciated, with soft protuberant abdomens, and listless, torpid, indolent dispositions. The appetite is generally voracious, and the thirst incessant and insatiable. The child

desires every thing of an eatable kind that he sees, and is constantly crying for water, large quantities of which he will swallow at a time, if not restrained. The bowels are usually constipated or irregular, and the digestive process is so far disturbed, as well by a diseased condition of the stomach, as by the amount of food, often of a crude, and insoluble kind, with which this organ is always overloaded. It is not uncommon for the discharges from the bowels to be mixed with portions of undigested aliment, particularly of the vegetable substances that have been swallowed, whether cooked or uncooked.

Mellituria.—Diabetes mellitis, is a much more rare disease during childhood; that it occasionally occurs, there can be no doubt. It has been observed in boys of three and five years of age, and in both boys and girls about twelve. (M'Gregor, Willis.) In one of the cases referred to by Morton, (Phthisiologia,) we are expressly told that the urine was mellea dulcedo; while in the disease described by Venables, as

tabes diuretica, the urine was evidently insipid.

Diabetes in children seldom occurs during lactation. It would appear to depend, very generally, upon derangement of the digestive and assimilative functions, consequent upon the use of improper food, subsequent to weaning. A confined, damp, or impure atmosphere, the want of sufficient exercise, and a congenital infirmity of constitution, are, no doubt, also, very common exciting or predisposing causes.

The child exhibits, at first, no striking symptoms of disease, but becomes gradually dull, listless, and fretful; loses its usual playful and active disposition, and exhibits an uneasy, discontented, and anxious expression of countenance. The bowels are generally regular, with little or no deviation from the natural and healthy appearance of the discharges. The tongue has a natural appearance. At an early period, however, there is an increased discharge of urine, increased thirst, and a more craving appetite than usual; and these symptoms, with the gradual emaciation, and dry, harsh state of the skin, are in general referred to the presence of worms in the intestines, for which the child is treated—the real nature of the disease being entirely overlooked.

The emaciation goes on increasing, while the abdomen becomes more tumid, but without much tenderness or tension. The tongue becomes coated with a thick layer of mucus; the bowels become constipated or irregular, and the stools acquire an unnatural appearance, being occasionally slimy and green, or mixed with portions of undigested food; occasionally they are frothy, light-coloured, and apparently in a state of fermentation. The thirst rapidly increases, as well as the craving for food, and at the same time the discharge of urine increases rapidly in quantity, becoming often enormous; exceeding at times, perhaps very generally, the amount of fluid taken. The emaciation goes on with increasing rapidity, and is attended often with extreme debility; the skin becomes uniformly dry, and very harsh. There is almost invariably a gnawing sensation at the pit of the stomach, and increasing dullness, inactivity of disposition, and depression

of mind. The pulse, which was at first somewhat accelerated, becomes now small, quick, and hard. The latter stage of the disease is often accompanied with a considerable degree of febrile excitement, often attended with head-ache, vertigo, and temporary delirium. In cases of long continuance, ædematous swellings of the lower extremities, or even general dropsy have been known to occur. (Venables.) The child gradually sinks, apparently from an entire suspension of the nutritive process; in other cases, a state of deep coma precedes the fatal event. (Venables.)

The urine discharged is generally pale, perfectly limpid, without the least trace of sedimentitious matter; in some cases, however, it is of a milky appearance, and slightly turbid, and occasionally of a very light yellow or greenish hue, having a very close resemblance to

whey.

Diabetes is always to be considered as a serious disease; when detected in its early stages, it is very possible, that by a proper course of treatment, its fatal termination may be very generally prevented; but, unfortunately, it is seldom that the disease falls under the notice of the practitioner, until it has existed for some time; the discharge of urine increases so slowly in amount, that it is entirely overlooked by the parents of the child, or if noticed, is ascribed to the enormous amount of fluids which his morbid thirst prompts him to take. Even when a physician is consulted, the case is too often considered as one of worms, mesenteric disease, marasmus, or dropsy of the brain; (Venables;) and an improper course of treatment adds to

the fatality of the disease. The first attention of the physician should be directed to restore the healthy action of the digestive and assimilative organs; for unless this can be accomplished, there is very little hopes of arresting the inordinate and unhealthy action of the kidneys. The child should be put upon a strictly regulated diet, composed of the more digestible kinds of animal food, plainly cooked, with preparations of milk, eggs, and rice or oatmeal, without sugar; crackers should be given, in preference to bread, or if bread be eaten, it should be well toasted. In the quantity of food taken, the patient should be so far restrained as to prevent the stomach from becoming, at any time, overloaded; probably four meals a day, at stated hours, a very moderate quantity being eaten at each, will be most advisable. The patient should be positively restrained from the use of all crude, ascescent or saccharine vegetables, or fruits; and for his drink, he may take toast-water, slightly acidulated with hydrochloric or nitric acid, but in no larger quantities than is absolutely necessary to allay thirst; tea, coffee, lemonade, thin gruel, whey, and the like, must be absolutely prohibited. With this diet, a due amount of exercise should be taken daily, in a dry, pure, temperate atmosphere:-the patient should be allured out of doors for a short walk, or if too torpid or debilitated for walking, he should ride, or sail upon the water every day, when the weather will permit.

The functions of the skin appear to be, in a great measure, suspended, in cases of diabetes; hence, the warm bath, and friction of the surface, become important measures, and should be daily repeated. The bowels should be freely purged, and kept open, subsequently, by gentle aperients; in the first instance, we may give a combination of aloes, rhubarb, and the bicarbonate of soda; or aloes, gamboge, carbonate of soda and extract of hyosciamus; and the bowels, after being once freely evacuated, may be kept regularly open by a combination of calomel, extract of hyosciamus, magnesia and ipecacuanlia.

²R.—Alocs, gr. xij.
Pulv. rhei, gr. xxxvj.
Bi-carb. sodæ, gr. xxiv.—M. f.
pill. No. xiij.

Of which one, or two, or three, may be given, according to the age of the child, every three hours, until they operate freely.

^bR.—Aloes, gr. xij. Gambog. gr. xij. Bi-carb. sodæ, gr. xxxvj. Ext. hyosciami, gr. xij.—M. f. pill. No. xiij.

This forms a very prompt, gentle and effectual purgative, when one pill is given every three hours.

R.—Calomel, gr. xij.

Magnesiæ, gr. xxxvj.

Ipecac. pulv. gr. iij.

Ext. hyosciami, gr. vj.—M. f. ch. No. xij.

One to be given once or twice a day, as may be necessary.

In some cases, emetics of ipecacuanha, repeated daily, for two or three days, in the commencement of the disease, have been found beneficial. (Richter.) Occasional small doses, say one grain to a child between one and two years old, of the compound powder of ipecacuanha, may be given two or three times a day, after the bowels have been fully evacuated; combining the opiate with uva ursi, or the carbonate or phosphate of iron, is said to be attended, in many cases, with the most decided benefit. (Venables, Reirson.) A combination of uva ursi, carbonate of soda, extract of hyosciamus, and carbonate of iron, will likewise be found a very valuable remedy; or the uva ursi, extract of hyosciamus, and iron may be prescribed in a fluid form, which is preferable, generally, in cases of disease in children.

^aR.—Pulv. ipecac. comp. gr. xij. Pulv. uvæ ursi, 3ss.—3j.—M. f. pulv. xij.

Or, R.—Pulv. ipecac. comp. gr. xij.
Carb. ferri, Jijss.—Jj.—M. f.
pulv. xij.

Or, R.—Pulv. ipecac. comp. gr. xij.
Phosphat. ferri, gr. xxiv.—xxxvj.
—M. f. pulv. xij.

One of either of these formulæ may be given to a child between one or two years of age, every four hours.

LR.—Pulv. uvæ ursi, Jss.
Bi-carb. sodæ, gr. xxiv.
Ext. hyosciami, gr. xij.
Carb. ferri, gr. xxiv.—M. f. ch.
No. xij.
One to be given threc times a day.

Aquæ, 3j.—M.

Five drops of this solution, and the same quantity of the tincture of the sesquichloride of iron, may be given three times a day, in a teaspoonful of an infusion of uva ursi, one ounce to the pint of boiling water.

R.—Extract hyosciami, 9j.

Infusions of calomba, gentian, or quassia, may be used occasionally, with very good effect. During the period of dentition, careful attention should be paid to the condition of the gums, and if these be swollen, painful and red, they should be freely scarified.

The external application of the spirits of turpentine has been recommended in cases of diabetes in children: (Dewees:)—there can be no doubt, that in nearly all the diseases of childhood dependent upon a highly deranged state of the alimentary canal, of a chronic character, turpentine constitutes, when judiciously employed, one of our most beneficial remedies; and, so far as the disease of the digestive organs is concerned, we have no doubt it would prove an appropriate remedy in the species of hyperurisis under consideration. We have been deterred from prescribing it, however, lest its action upon the kidneys might prove prejudicial.

The tannin has been used in some cases of diabetes, with success; (Giadorou;) and is worth a trial, in a disease, which, in children, it is

particularly difficult to control.2

aR.-Tannin, Jj.

Ext. hyosciami, gr. iv.—M. f. ch. No. xij.

One of these may be given to a child over one year of age, every three hours, the quantity of tannin in each dose being gradually increased to ten or fifteen grains.

SECTION VII.

CONGENITAL AFFECTIONS, AND ACCIDENTS OCCURRING MOST GENERALLY WITHIN THE MONTH.

1.—Spina Bifida.—Hydro-Rachis.

Hydro-rachis is, strictly speaking, an abnormal accumulation of fluid within the spinal column; it is, in almost every instance, a congenital affection, and may be associated either with hydrocephalus or spina-bifida. In the latter case, one or more tumors will be found to exist upon the spine, generally in its lumbar, occasionally in its dorsal and sacral, and very rarely in its cervical portion. These tumors vary in size, from that of a hazel-nut to that of the adult head, or the entire spine being bifid, the tumor may occupy its whole length. (Richter.) The tumor is usually globular or ovoid in shape, having either a large base or narrow neck; in one case, it was bi-lobed. (Brewerton.) It may be invested by the common integuments, in a healthy, uninflamed condition, or the skin covering it may be thin, almost transparent, and crossed by purplish lines, and as if about to rupture, with a sero-sanguineous fluid exuding through it; or, the tumor may be ruptured, its contents having escaped through a very small, ulcerated opening, which is surrounded by a red, rugous, unequal elevation of the skin and subcutaneous tissue. The two latter conditions of the tumor are much more common than that in which it is

covered by healthy skin, and far more dangerous.

The tumor is always situated over a deficiency in the vertebræ, arising most commonly from an imperfect development of the lateral arches; occasionally, however, the lateral arches may exist, but remain ununited, or, still more rarely, there may be a complete division of the whole vertebra, body as well as processes. (Fleischman.) The opening in the vertebræ may be confined to one bone, or extend to two or more, or it may occur at different parts of the spine, giving rise to several tumors, or, as we have already seen, it may exist throughout the whole extent of the spine. The tumor itself is formed by a cyst, communicating with the spinal cavity, and filled by a fluid secreted within the latter. In the most favourable cases, its parieties are composed of one or both layers of the arachnoid membrane, the dura mater, and the common integuments in a natural condition; more generally, however, its parieties are thickened, inflamed, ulcerated, gangrenous, or covered with fungous granulations, or tufts of hair.

To the touch, the tumor is tense and protuberant, whenever the position of the infant is such as to allow the fluid from within the spinal canal to gravitate towards it but it is more or less soft and flaccid under opposite circumstances. By gradual pressure, its bulk may be diminished, and if of small size, the whole of its contents may be forced back into the spinal cavity, when the margin of the opening through the vertebræ may be felt with the finger. Pressure upon the tumor very frequently induces a state of coma, or convulsions, and in one case, pressure, even that resulting from the supine recumbent position of the child, invariably produced attacks similar

to the croup-like convulsions of laryngismus. (Hall.)

In some cases, the tumor has been observed to expand during expiration, and sink during inspiration. (*Cruveilhier.*) The contents of the tumor may be either a limpid, colourless serosity, or a turbid fluid, often containing albuminous flocculi, or a purulent matter.

The fluid of the tumor communicates freely with that collected within the cavity of the spine; and in many cases, there is a free communication, between the ventricles of the brain and intercranial arachnoid cavity, the entire canal of the spine and the cavity of the external tumor, so that pressure made upon the latter may force the fluid back upon the brain, and cause more or less compression of that organ.

Children affected with spina-bifida often present other malformations, as imperforate anus, imperfect or irregular development of the

alimentary canal, &c.

When there exists no external opening in the tumor, it being covered by the common integuments, and when the accumulation of fluid within the vertebral canal exercises no pressure upon the brain, or spinal marrow, so as to interfere with the free exercise of their functions, individuals affected with spina-bifida, though generally of weak

and infirm constitutions, may exhibit no particular symptoms of disease, and even live to an advanced age, without the occurrence of any serious evils, that immediately result from the spinal tumor. Cases of individuals labouring under spina-bifida, of almost every age, from ten years to fifty, and upwards, have been observed, (Bonn, Martini, Paletta, Acrel, Henderson, Copland, Warner, Hockstetter, S. Cooper,

Camper, Cowper, Swagermann, Ollivier.)

Generally speaking, however, from a greater or less deficiency in the spinal cord, or other morbid condition of it, or of the brain, the infants labouring under spina-bifida are liable to be affected with paralysis of the lower extremities, convulsions, an open state of the sphincters, and difficulty of respiration. They are occasionally unable to take the breast, and become gradually more and more exhausted; their feet and legs become cold and ædematous, their cries more and more feeble, their pulse extremely quick and feeble, their breathing more and more difficult, and often stertorous, and, finally, death takes place, preceded by convulsions or coma. The larger the tumor, the more intense and rapid is this train of symptoms. When, in particular, the tumor bursts, inflammation of the membranes of the cord, in general, very rapidly ensues, and we have then all the symptoms of spinal meningitis, and, in general, the patient is quickly destroyed.

If, however, the opening in the tumor is very small, notwithstanding a portion of fluid is constantly escaping, no very important suffering may result for a length of time. But, very commonly, the fluid discharged becomes more or less turbid, purulent, or even fætid, and symptoms of spinal inflammation very soon occur. When the tumor is of considerable size, its sudden rupture may produce a paroxysm of convulsions, terminating almost immediately in death.

It has been asserted, that a rupture of the tumor has taken place in utero, and the opening has again closed, previously to birth. (Dugès.) This appears to us, however, as very doubtful; the case cited in con-

firmation of it is certainly very far from being conclusive.

After death, the most common appearance met with is a more or less copious effusion of serosity, either between the pia mater and the arachnoid membrane of the spinal marrow, in the arachnoid cavity, or between the dura mater and bony wall of the spinal cavity; when in the two first situations, the effused fluid very generally communicates freely with the ventricles of the brain, and the arachnoid cavity within the cranium, in which there also exists a morbid effusion of serum. Occasionally, when the tumor is small in size, and covered with the common integuments, in a normal state, the brain is found to be perfectly healthy, the effusion of serum being confined entirely to the spinal canal. (Billard.) Even the medulla spinalis may present no apparent indications of disease. The effused fluid is usually perfectly limpid, excepting when meningitis has occurred, when it is generally thick, turbid and flocculent;—it may be of a light yellow,

greenish, or dark hue, and is often mixed with pus, or with more or less blood.

When an effusion of fluid exists, at the same time, in the cavity of the cranium, and in that of the spine, the fluid in the former has been of a different colour from that in the latter, showing the two to be perfectly distinct; in other cases, the fluid was prevented from escaping from the fourth ventricle into the sub-arachnoid cavity, by a firm, reddish membrane, which formed a cul de sac below the inferior angle of the ventricle. (Billard, Lediberder, Krause.) The spinal cord may either present congenital deficiencies, or malformations, or more or less traces of disease. The substance of the cord has been found entirely wanting, the membranes alone remaining; (Otto;) forming sometimes a closed sac, filled with a fluid. It may be diminished in size, divided into two parts, or expanded into a membrane. (Meckel.) It is often preternaturally long. (Ollivier.) The spinal nerves have been seen floating in the fluid of the tumor. (Lecat, Ollivier, Cruveilhier, Krause, Gilman.) They have been found, also, distributed on the inside of the tumor, forming, occasionally, a kind of nervous network. (Stafford.) More commonly, however, the substance of the cord is softened, like the walls of the cerebral ventricles in hydrocephalus; (Meckel, Billard;) and very generally, traces of meningitis of the spine exist, often extending even to the brain. (Billard.)

In regard to the pathology of hydro-rachis, numerous discordant opinions have been entertained. The disease is evidently a true congenital dropsy, either of the spine, or of the spine and brain; (Ruysch, Louth, Underwood, Ollivier, Billard;) the deficiency in the vertebræ, as well as the external tumor, being the result of the accumulation and pressure of the fluid within the cavities of the cranium and spine. When the tumor in the spine is not formed, the child usually perishes soon after birth, with symptoms of hydrocephalus; or tumors, in some instances, form upon the head, in all respects similar to those of spina bifida, the fluid protruding the dura mater and a layer of the arachnoid membrane, through an opening in one of the bones of the cranium. Dropsy of the spine, with the formation of an external tumor, has succeeded to hydrocephalus, produced by contusion of the head; (Morgagni;) or from disease of the spinal cord. (Frank, Reydellet,

Krause.)

In regard to the treatment, it would appear, from a careful examination of all the facts upon record, and from the result of the very few cases which have fallen under our own notice, that, when the tumor is small, and more especially when it is covered with the common integuments, and the infant, as is generally the case, suffers little or no inconvenience, the most prudent course is to let it alone, merely guarding the tumor from accidental pressure, and from every source of irritation. So long as the tumor remains unopened, there is, comparatively, little danger, but soon after it becomes opened, meningeal inflammation, with all its train of fearful consequences, soon sets in, and quickly destroys the child.

The opening of the tumor is always, therefore, to be considered a most unfortunate circumstance; hence, if the infant be born with an ulcerated tumor, but incompletely perforated, it ought not to be opened for the purpose of allowing the discharge of its contents. (Billard.) It is true that the operation, first practised by Ruysch, and revived by Abernethy, of puncturing the tumor with a fine needle, and afterwards employing gentle pressure, has been performed, and it is said, in several cases, with success. (A. Cooper, Bampfield, Probart, Rosette, Robert, Stephens, of N. Y.) Very recently, two cases are related, in which a perfect cure was effected by cutting off the tumor, and then bringing the edges of the divided skin together, and retaining them so, until union took place, by means of the twisted suture, great care being taken to prevent the entrance of air into the spinal canal, and as much as possible, the escape of the spinal fluid. (Dubourg.) The application of gradual and gentle pressure, as recommended by Abercrombie and Sir Astley Cooper, is unquestionably the treatment that will be found the best adapted to the generality of cases of spina bifida; it is said to have produced a radical cure in some instances. (Acrell, Ruysch, Krause.) It has been very correctly remarked, that when the tumor is very large, puncture should not be attempted, while in cases where the fluid effused in the spine communicates with the ventricles of the brain, pressure must always be of very doubtful propriety. (*Underwood*.)

In all cases of spina bifida, much benefit will unquestionably be derived from placing the patient under such a hygienic course of treatment as will be adapted to improve the health and nutrition of the body generally; hence, the importance of changing the milk of the mother, if the quality of this be doubted, for that of a healthy nurse; of removing the infant from the confined and impure air of the city, to a dry, healthy situation in the country; of clothing it warmly, and carrying it abroad, every fine day, in the open air; of sponging its body daily with warm water, and using frictions over its entire surface, and of

keeping its bowels regular, by gentle aperients.

It has been proposed to apply repeated small blisters above the tumor, in the course of the spine, each being kept on so long as to cause a rubefacient effect only, with a view, in this manner, to promote the absorption of the fluid. (Bennett.) The preparations of iodine may also be administered with the same intent.

When the disease is associated with hydrocephalus, or with meningeal inflammation, either of the brain or cord, the treatment adapted

to the latter affections will, of course, become necessary.

2.—Club-Foot.—Talipes.

Children are frequently born with various deformities of the feet, to which the popular denomination, club-feet, has been applied. The foot may either be turned outwards, so as to allow its inner margin to rest upon the ground, (valgus, talipes valgus;) or inwards, its outer

edge being directed to the ground, (varus, talipes varus;) or the heel may be drawn up, so as to direct the toes downwards, and extend the foot, causing it to approach a right line with the leg, (pes equinus talipes equinus.) A fourth variety has been described, in which the foot is flexed upon the leg, and the heel only is applied to the ground. (Little.) This distortion is caused by a contraction of the muscles in front of the leg. These deformities are, in general, apparent from birth, but increase in extent as the child grows older, particularly as it approaches the period when it should walk; if not remedied at an early period, the child is, in general, doomed to lameness and defor-

mity for the residue of its life.

Much attention has been directed, of late years, to the investigation of the pathology and mode of remedying the various congenital distortions of the feet, by several distinguished surgeons and physicians of Europe and America. (Delpech, Jörg, Strohmeyer, Little, Scarpa, Colles, Mütter, Detmold.) Their immediate cause would appear to be a shortening of the gastrocnemii and other extensor muscles, or of those which rotate the foot outwards. The pes equinus, or extended foot, from shortening of the extensor muscles, is probably the most common form of distortion, the twisting of the foot inwards being produced secondarily, in consequence of the natural inclination of the os calcis, and the normal action upon this of the gastrocnemii, causing the foot to turn somewhat in that direction. As the turning inwards of the foot increases, the plantar muscles, ligaments, and aponeuroses become more and more contracted, the deformity increases, and first, the side of the foot, and finally, its dorsum, is applied to the ground, the bones of the tarsus are thrown into an unnatural position, and after the child begins to walk, being subjected to continual pressure, become altered in shape, in consequence of which the deformity, that in the first instance might, with due care, have been removed, becomes permanent. The twisting of the foot outwards, which is of comparatively unfrequent occurrence, is produced by a shortening of the abductor muscles. (Delpech.) The remote cause is to be referred to a defect in the nerves distributed to the muscles of the leg, in consequence of which there is a want of balance in the development and action of the antagonist muscles. (Delpech.) Distortions of the feet have been met with in fœtuses of from three to five months, with coexisting deficiencies, and malformations in the brain and spinal cord; in anencephalus and hemicephalus embryos, the hands, as well as the feet, have exhibited similar distortions. Children born with a deficiency or disease of the spinal marrow, are also very commonly affected with club feet; the deformity is hence a common accompaniment of spina bifida. (Billard.) It may also take place subsequent to birth, when from disease of the spine, temporary paralysis of the muscles of the extremities is produced, and on a partial recovery taking place, the flexor muscles acquire more power

Distortions of the feet are said to be hereditary, in consequence of

the transmission of a morbid irritability of the nervous system, predisposing to convulsive and spasmodic contractions of the muscles. We have no doubt that this may occasionally be the case, but of all the numerous cases of club-foot that have fallen under our notice, no one occurred in children born of parents, either of whom were simi-

larly affected.

In the treatment of club-foot, the grand object to be effected is to extend those muscles, the inordinate contraction or shortening of which has produced the distortion, and to increase the action and power of their antagonists. The first must be effected by mechanical contrivances, adapted to preserve the feet in their natural position, and counteract the force by which they are drawn out of it; and the second, chiefly by friction of the limbs, and a well conducted general hygienic treatment, calculated to reduce the excitability of the ner-

vous system, and to give tone to the body generally.

A variety of mechanical contrivances have been suggested, in the form of splints, stocks and shoes, to retain the foot in its natural position, and counteract the distorting force. It is not within the province of the present work to present a description of these several apparatus, or to enter into a discussion of the question, as to which of them is the best adapted to effect the object for which they are employed; we would merely remark, that in whatever contrivance we adopt, simplicity and lightness are of the first importance, as well as such a form as will prevent any undue pressure upon the part that is made the point d'appui. The form of the apparatus will vary somewhat, according to the species and degree of distortion, in order to enable it to act effectually upon the shortened muscles, which should be gradually and gently, but constantly extended. When the shortening of the muscles is very considerable, or the force they exert in drawing the foot in an unnatural position, too powerful to be overcome by any mechanical means that it would be prudent to employ, it is probable that a division of the tendons might be advantageously resorted to, but we must recollect that such division will not be sufficient to effect a cure; in no case can this be accomplished without a longcontinued use of appropriate mechanical means; - while the latter alone, if commenced with sufficiently early, when the parts involved in the deformity are still sufficiently flexible and the ligaments, aponeuroses, and bones of the foot have undergone no important changes, and when the confinement of the foot can be borne with greater ease than at a later period, will, in most cases, be fully adequate to produce a complete removal of the deformity.

3.—Hare Lip.

It is not our province to enter into a description of the several forms of hare lip, nor of the surgical operations by which they are to be remedied. The only question in relation to them we propose to notice, is, at what period should an operation be performed; this

question will be put to the physician, and it is important that he should be able to answer it understandingly. As the deformity is always considerable, a natural feeling on the part of the parents urges them to desire its early removal, and, in many cases, an immediate operation is absolutely necessary, in order to preserve the life of the little patient—the abnormal division of the lip, complicated, perhaps, with a division or deficiency of the bony palate, preventing the child from sucking; here, whatever risk, if there be any, is attendant upon an early operation, must be encountered, as the only chance we have by which the infant can be saved from a lingering death from inanition. If the deformity, however, does not interfere with suckling, we believe it will be better, in all cases, to defer the operation until the child has attained an age when it will be attended with less danger of inducing convulsions, or other dangerous consequences, and when there is a greater chance of its proving successful. The question nevertheless, still presents itself, how long is it proper to wait before performing the operation, or, in other words, what is the earliest period at which it may be undertaken, without danger to the child, or of its failure in the removal of the deformity. The end of the first or second vear, is the time usually adopted for the operation. A much earlier period, however, has recently been recommended as the most suitable for its safe and efficient performance, and several cases heve been adduced to prove the ressilience of a young infant, under the operation, and the strength of its reparative powers. (Houston.) The age which the gentleman just referred to considers the best for undertaking it is about the third month;—he has never seen convulsions follow its performance at this age, and he knows of no other evil consequences, to which the young infant is liable, to which it is not equally liable, when a year or two older.

operation, there would be no question at all as to the importance of remedying the defect, at the earliest age possible; the effectual removal of the deformity, and the inconvenience attendant on it, being then more easily and certainly effected, than when the operation is deferred to a later period. We are persuaded with Dr. Houston, that the dangers and difficulties attendant upon early operations, are greatly overrated;—several instances of the successful removal of simple hare lip, at ages, varying from a few days, up to as many months, have been recorded within the last two years, and we have so repeatedly seen the operation performed in children, from six weeks to four months old, with perfect success, and without the occurrence of the slightest untoward symptom, that we feel it our duty to recommend its adoption very generally at the termination of the third month, or where the deformity is very great, at even an earlier period.

4.—Ruptures.—Herniæ.

Hernia is, by no means, unfrequent in early infancy. Children have even been born with umbilical, inguinal, or scrotal hernia, or

with two or more hernial protrusions. More commonly however, the protrusion takes place, within the first few days or weeks, after birth, and it is important, that it should receive early attention, as well to protect the infant from suffering or danger, as from the circumstance, that, by proper treatment, a radical cure may then, in many cases, be effected, and thus the patient saved, in after life, from all the serious consequences invariably attendant upon this infirmity, in what-

ever region of the abdomen it may be located.

The most frequent form of hernia met with in the infant, is that of the umbilicus, (exomphalus.) This results from the circumstance of the base of the umbilical cord, in early fætal life, forming a portion of the anterior parietes of the abdomen, and containing the greater part of the intestinal tube. In proportion as the development of the fœtus is perfected, the base of the cord contracts, the convolutions of intestines, at the same time, retire within the cavity of the abdomen, and the aponeurotic sheath surrounds, and further contracts the base of the cord, allowing only a sufficient opening for the passage of the latter, with the urachus and umbilical vessels. In some instances, however, the commencement of the cord remains of a large size, and some of the convolutions of intestine continue within it, forming at birth a hernial sack of a round or rather conical form; the summit corresponding with the proper commencement of the cord, and the base, to the circumference of the aponeurotic ring at the umbilicus, (Billard,) which is of larger size than natural. The hernial sack is composed in these cases of the peritoneum, with the skin and cellular tissue, more or less condensed. This hernia, though strictly congenital, may not be perceptible, until some days after birth, when the intestines become distended by aliment, and crowded downwards towards the umbilicus, by the contractions of the diaphragm, during inspiration, and the act of crying. The bulk of the protrusion varies very much; ordinarily, it is about the size of a hickory nut, but may increase to that of a walnut, or even beyond. It generally contains a convolution of intestine, but may contain only omentum;—it is always larger and more tense, when the infant cries or coughs. Upon relaxing the abdominal muscles, and using gentle pressure, the contents of the sack may be readily forced back into the cavity of the abdomen, when, through the parietes of the empty sack, an aperture into which the point of the finger can be inserted, is perceptible in the linea alba.

Until the separation of the cord, and the cicatrization of the navel, it is unnecessary to do any thing more than to apply, in addition to the usual bandage, a compress formed of a few folds of soft linen, immediately over the umbilicus. As soon, however, as cicatrization is completed, a more effectual course of treatment must be commenced; and the earlier this can be done, the greater will be our chances of effecting a radical cure. Our object is to keep the protruding bowels completely and permanently, within the abdomen, so as to permit the natural closure of the opening, through which they escape, to take place:—the best means for effecting this, we have found to be, a portion of gum elastic of a conical shape, and

about an inch in thickness, which being neatly covered with a portion of soft muslin, is to be stitched to the centre of the ordinary belly-band. The apex, which should not be larger than the umbilical opening, is to be accurately applied over the latter, and the band fastened in the usual way. This compress should be kept on constantly, for it is only by long continuance, that we can expect any benefit to result from its employment, in these cases:—in proportion, however, as the infant advances in age, the umbilical opening contracts, the intestines acquiring too great a volume to pass through it. We have, in numerous instances, effected a complete cure, by the means described.

Another mode of treating umbilical hernia in infants, and one that will no doubt be found admirably adapted to prevent the protrusion of the intestines, is the application of a graduated compress, formed of white leather, spread with adhesive plaster, over the opening, and above this, the common flannel roller. (Maunsell.) The apex of the compress, which is to be applied next the navel, should be, as nearly as possible, of the size of the opening; the compress should consist of three or four pieces, the largest being about three inches in diameter; and a double stitch should be passed through them, and knotted externally, so as to keep each piece in situ. We should always apply the compress with our own hands, as great care is necessary to ensure the complete return of the hernia. Unless the child exhibits marks of uneasiness, it should not be removed, until the plaster loses its adhesive quality, and then a new one should immediately be applied. In conducting the case, patience will be greatly exercised, as months will be required for the completion of the cure, and this should be explained to the friends, at the beginning. (Maunsell.)

It has been recommended to apply a section of an ivory ball over the umbilicus, and retain it there by adhesive plaster, and a bandage. (A. Cooper.) To maintain an equal and constant compression, an

elastic belt and pad might be found useful, in all cases.

A plan originally adopted by Mr. Woodroofe, of Cork, answers, it is said, very well, when there is a small opening with a considerably elongated sack; it is, after reducing the contents, to hold the pouch firmly between the fingers, and then to wind around it a narrow strip of adhesive plaster, commencing as close as possible to the abdomen, and continuing to the apex. This plan may succeed, by causing adhesion of the walls of the sack, which will thus form a natural truss, and prevent protrusion through the opening in the linea alba; it cannot be employed, however, when the hernial tumor is broad and flat. (Maunsell.)

It has been proposed to apply a ligature around the base of the tumor, with the view of inducing inflammation, and adhesion of the sides of the hernial sack. (Desault, Dupuytren.) This plan, which is the one described by Celsus, though apparently well adapted to effect a permanent cure, has, nevertheless, been abandoned by most modern surgeons, in consequence of it being found, that the patients in whom it was tried, are liable subsequently to a return

of the hernia. (Richerand, Riermann.)

In the male, congenital inguinal hernia is, by no means, unfrequent. It may exist upon one or both sides. In passing out of the abdomen of the fœtus, through the abdominal ring, the testicles always carry with them a portion of the peritoneum, by which they become enveloped, and which also forms the vaginal sack, in which they are contained. This sack may become perfectly closed at its upper part, so as to cut off all communication between it and the cavity of the omentum; often, however, it remains partially or entirely open, so as to allow a convolution of intestine, or a portion of omentum, to descend into it, the bowel being in contact with the intestine, and becoming sometimes adherent to it. The communication between the vaginal cavity of the scrotum and the abdomen, may exist, without giving rise to hernia; (Hassleback;) and it is possible for a portion of intestine or omentum to descend to the bottom of the sack, although the testicle may still remain within the abdomen, or have descended no further than the ring; (Pott;) while, again, ordinary, non-congenital, inguinal hernia, with strangulation, has been observed in an infant of fourteen months. (Lawrence.)

It is no uncommon occurrence for the testicle, at the period of birth, to be arrested at the ring, or to have just passed through it, forming a hard rounded tumor in the groin; we must be cautious not to mistake this for hernia, and as the testicle may remain in this position, even while a portion of intestine has descended into the sack; the fact should always be kept in mind; as no truss should be ever applied, until the testicle has passed fully into the scrotum. Scrotal hernia should not be confounded with hydrocele, which is of common occurrence in infants. The latter may be distinguished by its transparency, and by our being unable to feel the cylinder of the intestine rolling under our fingers, within the sack. The fluid distending the vaginal sack of the scrotum, we are to recollect, may, in many instances, be returned into the cavity of the abdomen, and when this is the case, the size of the hydrocele will be increased when the infant cries or coughs; but with a very little care, such swellings may very readily be distinguished from congenital or accidental hernia. As a general rule, there can be very little certainty as to the existence of the latter, until the testicle has descended into the scrotum. (Billard.)

A curious case is related of congenital inguinal hernia in a female infant: (Billard:)—there existed, in this instance, in the left inguinal region, a rounded tumor, about the size of a filbert, rather hard to the touch, and incapable of being returned into the abdomen, or diminished by pressure, neither was it enlarged by the crying of the child. The tumor was directed obliquely towards the labium of the same size, but did not quite reach to it. The child died from pneumonia, when it was found, that the tumor was a real hernial sack, containing the left ovarium, and frimbriated extremity of the fallopian tube, a little reddened and swollen. These had descended, and passed

through the inguinal canal and ring; which latter was much larger than it usually is in the female infant, and were contained in a sack formed of a prolongation of the peritoneum, with the cavity of which it communicated. There were no convolutions of intestine adhering to the surrounding parts:—the right ovarium was in its usual situation;—the round ligament of the uterus on the side, at which the ovarium had descended, was much shorter than that on the opposite side, and terminated, in the labium, by an aponeurotic expansion, instead of losing itself in loose filaments, as usual. Hence, it would appear, that the shorter and more firmly attached ligament had first caused the uterus to incline towards the left side of the bladder, and then drew with it the ovarium through the inguinal

ring.

In the treatment of congenital inguinal hernia, the same objects, precisely, are to be had in view, as in the treatment of that of the the umbilicus, namely, to retain permanently the protruding bowel within the cavity of the abdomen, and to favour the natural closure of the ring. The child should be kept as tranquil as possible; it should be restrained, by every means in our power, from violent paroxysms of crying, and from all exertion likely to increase the protrusion. When the hernia is present at the period of birth, or appears soon after, it should be at once reduced, and a temporary bandage is, then, to be applied with a small compress upon the abdominal ring; but little compression, however, should be at first resorted to, and the bandage and compress should be frequently changed, as well from a due attention to cleanliness, as to prevent the irritation of the skin, which would otherwise speedily result from their being constantly wet, and soiled by the natural discharges. As soon, however, as the infant is of sufficient age to allow of it, a properly constructed truss should be applied, and constantly worn. From the smallness of the pelvis, before the end of the first year, and the difficulty of keeping the straps from being continually wet, and causing, in consequence, chaffing of the parts, with which they are in contact; it is scarcely possible to get any truss to fit, or to keep it on sufficiently constant, previous to that period, and even then we will often be completely foiled. (Maunsell.) We have, in fact, seldom seen much good result from a truss, or any other retentive apparatus, excepting a simple bandage and compress, before the third or fourth year. Attention should be paid to preserve the bowels of children affected with hernia, freely and regularly open.

If the hernia should become the seat of inflammation, indicated by increased tumefaction, pain, and tenderness upon pressure, leeches should be immediately applied, in numbers adapted to the age and strength of the child; the warm bath should be employed; the tumor covered with a light emollient poultice, and the bowels freely evacu-

ated by castor oil or mild laxative enemata.

Should the hernia become strangulated, an operation will become necessary; provided, we are unable to procure a reduction of the tumor, by the means just indicated.

Besides the herniæ resulting from the escape of a portion of the bowels, at one or other of what are termed the natural openings in the walls of the abdomen, they may also be produced by a congenital deficiency in the parietes of this cavity. This usually occurs near the umbilicus, and on the median line. The integuments are sometimes wanting around the umbilicus, and the sack, enclosing a portion of intestine, is formed by the base of the cord alone; this covering is sometimes so thin, that the intestine may be seen through it. In a case of this kind, a permanent occlusion of the umbilical opening was produced by reducing the intestines, the return of which was prevented by an assistant, compressing the cord close to the abdomen; when a compress, formed of circular pieces of leather spread with adhesive plaster, laid one upon another in a conical form, was placed upon the navel; the skin upon each side of the aperture was brought into contact, one lip slightly overlapping the other, and the whole was secured by a linen belt with a thick quilted pad, of a circular form, applied over the navel.-The bandage was renewed occasionally. By these means, the intestine was securely retained within the abdomen, and at the expiration of a fortnight, after the separation of the funis, the aperture at the navel was so far contracted, that not the least protrusion was occasioned even by the crying of the child. (Hey.)

This case will sufficiently indicate the general plan, upon which the irregular herniæ occurring during infancy, are to be managed; of course, slight modifications will be required in particular cases, which the good sense of the practitioner will readily suggest. Early and judiciously treated, nearly all of these herniæ may be permanently removed; whereas, if neglected or improperly managed, they may entail a serious infirmity, that will last, as long as the individual

lives.

Arrest of the Testicle. As closely connected with the subject of congenital inguinal hernia, a few words will be proper, in this place, in relation to a not unfrequent occurrence, from which we have repeatedly seen a very considerable amount of suffering result, we allude to the arrest of the testicle at the abdominal ring, or in the groin, in its passage from the abdomen. In this situation, it frequently becomes inflamed, which after causing severe pain, sometimes of several days continuance, attended with considerable febrile reaction, and occasionally with tension and tenderness of the abdomen, nausea, or vomiting, obstinate constipation, and the other symptoms of peritoneal inflammation, produces, in the groin, or at the ring, a small, intensely red tumor, exquisitely painful to the touch, and upon every motion of the patient's body-in this, suppuration, sooner or later, occurs, forming an abscess of considerable size. This inflammation is often attended with complete disorganization of the testicle.

The treatment consists in leeching, warm bathing, and emollient poultices to the groin, laxatives by the mouth, and gentle purgative enemata. The child should be kept as much as possible at rest, and as soon as an abscess forms, it should be opened.

5.- Vaginal Hamorrhage.

In many cases, a discharge of red fluid blood takes place from the vulva of the new-born female infant, and continues, without interruption, for several days or even weeks, after birth. This sanguineous discharge is unattended by redness, swelling, or any other indication of the existence of the least degree of irritation in the vagina, or external parts of generation; nor do the functions and general health

of the child appear to suffer any derangement.

It is very difficult to understand the cause of this discharge, not-withstanding the extreme vascularity, amounting often to a perfect hyperæmia of all the mucous surfaces in early infancy;—we can trace the excretion of blood, in these cases, to no very evident exciting cause, unless we adopt the explanation that has been offered, which attributes it to the same physiological cause which, in after life, produces the catamenial discharge—nature appearing to anticipate, in some degree, the establishment of a function which is fully developed and regulated, only, at a much later period of life. (Ollivier, of Angers.) This suggestion would appear to derive some support from the character of the discharge, which has certainly much resemblance to the catamenial flux in the adult female.

The discharge always ceases of itself, and requires no particular treament; the preservation of perfect cleanliness by repeated ablutions of the vulva will, of course, be necessary. The alarm and anxiety which this discharge almost invariably excites in the mother, and those about the child, should be quieted by an assurance, that, in no instance, so far as we are aware, certainly in no instance that has fallen under our notice, has any inconvenience resulted from it; nor has it ever continued beyond the first few weeks, after birth.

6.—Inflammation and ulceration of the Navel.

Within the first nine or ten days after birth, inflammation and subsequent ulceration of the navel is very liable to occur, if the utmost attention is not paid to prevent it. Upon the separation of the cord, instead of a quick and perfect cicatrization succeeding, the navel remains raw, and soon becomes irritated and inflamed, presenting a deep red, ulcerated surface, and an inflamed condition, to a greater or less extent of the surrounding skin. A thin, purulent, and often offensive discharge takes place from the surface of the ulcer, and the infant evidently suffers considerable pain, as evinced by its general fretfulness, and its cries when the ulcer is examined or accidentally touched. In some cases, the navel presents an elevated ulcerated surface, with somewhat prominent edges; in these, the discharge is generally the most profuse; in other cases, a kind of fungus excrescence of a

dark red colour protrudes from the centre of the navel, without any appearance of ulceration, and with but little discharge, and scarcely any inflammation of the surrounding skin. We have often, indeed, seen the skin up to the very edge of the umbilical depression perfectly natural. The fungoid tumor, which generally bleeds upon the slightest irritation, may either present a narrow base with a round expanded head, like a cherry, or a broad base, tapering gradually towards

the summit, being more or less conical in form. (Dewees.)

Ulceration of the navel, as we have already remarked, is very generally the result of neglect or mismanagement on the part of those who wash and tend the infant; in a few instances, it is true, it may result from a slow and imperfect separation of the cord, in consequence of which it remains long attached by a thin, firm filament, and causes a constant irritation, by which the healing of the navel is prevented, and ulceration induced. More commonly, however, it is produced by rude management in washing and dressing the child, previous to the coming off of the cord, or by rude dragging or other improper attempts to facilitate its separation, or by the ridiculous practice of dressing the navel subsequently, with a burnt rag, grease, and even more improper applications. It may, also, arise from inattention to cleanliness, in the first washing of the child, in consequence of which a quantity of the vernix caseosea is left upon the skin, surrounding the umbilious, which soon acquires an irritating character. From peculiar irritability of the skin, some infants are more liable to ulceration, or rather tardy and imperfect healing of the navel, than

In all cases, the utmost attention should be paid to cleanliness. The navel and surrounding skin should be carefully washed, at least twice a day, with lukewarm water, and then wiped perfectly dry with a soft linen cloth. If the cord still remains attached by a thin filament, the division of this, and the removal of the cord, will often be sufficient to allay the irritation, and thus allow the navel to cicatrize.

(Dewees.) When the ulceration is superficial, without much inflammation, washing it with a little rose water, twice a day, and dressing it, as often, with the ceratum zinci oxydi impur. spread upon a soft rag, will often cause it promptly to heal; or, if this should not succeed in causing cicatrization, the ulcer may be washed daily with a solution of . sulphate of copper, and then dressed with the same salve. In slight cases, by sprinkling the ulcerated surface with finely powdered oak bark or galls, we have repeatedly found cicatrization to take place very promptly, without any other dressing. If the ulceration should still show no disposition to heal, it may be washed with a weak solution of the nitrate of silver, and dressed with an ointment formed of lard and the acetate of lead. In aggravated cases of ulceration at the navel, prompt and very decided benefit is said to be derived from applying to the ulcerated surface, three or four times daily, by means of a soft hair pencil or feather, a linement made by slowly simmering the

coarsely powdered root of the wild indigo, (baptisia tinctoria,) in cream, and afterwards squeezing it through a thick piece of muslin or flannel. (Eberle.)

aR.—Sulph. cupri, gr. x. Aq. puræ, Jj.—M. bR.—Acctat. plumbi, 9j.
Axung, 3j.—M.

In all cases, however, in which the ulceration is attended with considerable inflammation, extending to the surrounding skin—stimulating applications of every kind should be withheld, until this inflammation is reduced by soft emollient poultiees, and frequent washing of the inflamed skin with a solution of the acetate of lead. In some instances, we have seen the inflammation in cases of ulceration of the navel, so extensive as to demand the application of a few leeches.

It is not unfrequent for the bowels of infants affected with ulcerated navel, to be considerably disturbed, the passages being frequent, thin, and attended with griping;—whenever this is the case, the administration of very minute doses of calomel and ipecacuanha combined with a few grains of magnesia, with the daily use of the warm bath,

will be demanded.

When a fungoid tumor forms or protrudes from the navel after the separation of the cord, if it have a narrow base, we may readily remove it by a ligature applied around its pediele, sufficiently tight to arrest the circulation, without cutting into its substance; (Dewees;) the tumor usually separates in the course of a few days, when the ulcerated surface may be washed with a solution of sulphate of zinc,² or dressed with the ointment of acetate of lead. It is seldom, however, that the separation of the tumor, by means of the ligature, is attended with any permanent benefit; very generally, the fungus growth will recur to as great an extent as at first:—it is better, therefore, to treat it at once by astringent applications, as the decoction of galls or oak bark, solutions of the sulphate of eopper or zinc, in the proportion of one draehm to the ounce of water; or, we may sprinkle the surface of the tumor with finely powdered oak bark or galls, and wash carefully, night and morning, with lukewarm water. It is said, that the root of the sanguinaria canadensis, in fine powder, is an admirable application, for the removal of these fungoid growths. When the tumor is soft and spongy, and not invested by a membrane, applying to its surface daily, by means of a camel's hair peneil, a - pretty strong solution of the nitrate of silver, will generally destroy it, in a few days, and allow the navel to eicatrize.

R.—Sulph. zinci, gr. xv. Aq. puræ, Zj.—M.

7.—Intumescence and Inflammation of the Breasts.

Infants of both sexes are very liable to a tumid, hard, and painful condition of the breasts, which is occasionally present at birth, but more generally presents itself a day or two subsequently, and is, in

some cases, attended with a degree of redness and inflammation of the external skin. This affection, even when the swelling and hardness are very considerable, after continuing for a week or two, without any sensible abatement, will then, very generally, subside entirely. Unfortunately, however, a vulgar notion being prevalent among mothers and nurses, that the swelling is the result of milk in the breasts, which it is necessary, by all means, to draw or squeeze out; an opinion that is confirmed, as they suppose, by the escape sometimes, of a white coloured fluid, resembling milk, at the nipple, causes them, not unfrequently, to resort to very rude measures to get rid of the offending fluid, in order that the infant's breasts may be cured. The consequence is, severe inflammation, followed by suppuration, and the formation of an abscess; many cases of this are on record, and we have ourselves met with a number. Even the entire substance of the female mammæ has, in this manner, been destroyed.

The intumescence of the young infant would appear to be the result of a sub-acute inflammation, attended with serous infiltration of the cellular tissue of the part. (Weber.) Occasionally, the inflammation extends to the substance of the mamma, and the skin by which the gland is covered, becomes very tense, shining, and of a dark-red colour. Even this aggravated form of the disease will very generally give way in a few days, to the simplest treatment; and we do not recollect having ever seen a case which was attended with any degree of trouble, or any great or prolonged suffering, and certainly no one which showed any tendency to terminate in suppuration, excepting when the tumor has been subjected to the rude and unjustifiable processes adopted for the removal

of the stagnant milk.

All that would seem to be required in the generality of cases, is to anoint the tumor daily, with a little sweet-oil, or fresh lard, and to cover it with a soft piece of tolerably thick muslin. from any cause, considerable inflammation, pain, and swelling of the breasts take place, the case should be treated by a few leeches, and the application of soft emollient poultices.

A weak solution of the hydrochlorate of ammonia, in diluted vinegar, has been proposed as a prompt and certain application in the ordinary form of this affection; we have never used it ourselves, but

we have no doubt that it will prove beneficial.

aR.-Hydrochlorat. ammoniæ, 3ss. Aquæ

Acid. acct. impur. āā Jij.—M.
To be applied warm, by moistening pieces of soft linen rag with it, and laying them upon the affected parts. (Eberle.)

It would be well for the practitioner himself to examine daily, for the first three or four days after birth, the breasts of the infant, in order to detect immediately any swelling that may occur; and when it does appear, to direct the proper measures to be pursued, forbidding, positively, at the same time, any attempt being made on the part of the nurse or other attendants, to squeeze or draw out "the stagnant milk," which, in their opinion, is the cause of the swelling.

8.—Hæmorrhage from the Navel-

Hæmorrhage may take place from the cut end of the cord, in consequence of the imperfect manner in which this has been tied, or the improper materials of which the ligature is composed; from improper handling, on the part of the nurse in adjusting the dressing of the naval, by which the ligature is displaced; or, more rarely, from the thick, firm, gelatinous matter, with which the vessels of the cord are eveloped, preventing the ligature from acting with sufficient force upon them to cause their closure; the prevention and remedy in this form of hæmorrhage are sufficiently evident. But the hæmorrhage does not always result from the divided end of the cord; we have in several instances found the umbilical vessels perfectly secured, but a constant oozing or percolation of blood to take place around the root of the cord, at the part where it is implanted in the walls of the abdomen, and in only one instance were we able to arrest the flow of blood; in all the other cases the patients perished exanguinous. In the instance alluded to, we directed a powder to be formed of starch, two parts, sugar one part, with an addition of powdered acetate of lead, amounting to one-half the quantity of sugara; this powder was applied around the cord, at the seat of the hæmorrhage, and an additional quantity constantly added as the blood penetrated through the former; after three hours close watching, a firm crust was formed, through which the blood no longer penetrated; at the end of twenty-four hours, the crust separated, without the hæmorrhage returning. We tried this plan in another ease without success; the blood flowed too freely to allow of the proper hardening and adhesion of the paste formed by its mixture with the powder, but flowed through, as well as beneath it.

> *R.—Amyl. Jij. Saech. alb. Jj. Acetat. plumb. Jss.—M.

Another, though more rare, still not uncommon form of umbilical hæmorrhage in young infants, in which the flow of blood takes place from the side of the cord, in consequence of a rupture or ulceration of one of the varicose dilatations of the umbilical veins, is not unfrequently met with. (Dewees.) We have seen one or two such cases. The arrest of the hæmorrhage is, in general, very easily effected, by the application of a ligature around the cord, below the place at which the blood is discharged. In one instance, however, from this being situated near the base of the cord, we found a good deal of difficulty in applying the ligature, and only succeeded, finally, by drawing out the cord until the skin surrounding it was put upon the stress. The ligature appeared at first to cause no inconvenience, to

the infant, but towards the close of the second day, so great a degree of pain was evidently produced by it, that we were induced to divide

it; the hæmorrhage, however, did not return.

There is still another form of hæmorrhage that occasionally occurs at the navel, and is sometimes attended with a good deal of trouble, and often endangers the life of the child. This takes place after the separation of the cord:-in place of the navel cicatrizing, it remains open, and a soft fungus rises from its centre, from which there is a constant oozing of blood, that may continue for a long time, causing, by the extent of the hæmorrhage, the utmost debility of the child, and putting his life often in imminent danger. The application of lunar caustic may stop, for a time, the discharge of blood, but we have never known it effectually to arrest it. We have occasionally succeeded by pursuing the plan recommended by Underwood, namely, the application of a dossil of lint, kept in its place by cross-strips of adhesive plaster, and secured by the proper adjustment of the belly-band; more frequently, however, we have found that covering the navel with the powder of starch, sugar, and acetate of lead, and then applying over this a graduated compress, secured by a broad bandage, passing around the child, more effectually prevented the discharge of blood, and allowed the navel to cicatrize.

However trifling these hæmorrhages may appear when described in books, and however easy it may seem to the inexperienced to arrest them, they nevertheless are among the most troublesome accidents occurring in young infants, that the practitioner is called upon to treat, and will often foil the best directed efforts for their

removal.

9.— Edema of the Prepuce.

The cellular structure of the prepuce, in the male infant, is occasionally the seat of a serous effusion, by which this part becomes sometimes enormously distended, and very hard to the feel; in a few instances, we have found the whole of the integuments of the penis to be similarly affected. When the prepuce is retracted behind the glans penis, a species of paraphymosis is produced, and we have known considerable difficulty to be experienced in the passage of the urine, from the stricture upon the urethra thus occasioned; a similar difficulty may also result when the tumefied parts envelope the glands, from the closure of the prepuce; ordinarily, however, the intumescence gives little or no trouble, and is unattended with pain or suffering, and generally disappears spontaneously. We have known it, however, to continue for a very long time, with little or no abatement.

Although we have arranged ædema of the prepuce among the diseases occurring within the month, it is by no means confined to this period; we have met with it frequently, in children of from one to

six years of age.

The causes of this affection it is, in many cases, somewhat difficult

to trace. It would appear to be occasionally produced by an irritation seated within the urethra, as a stone sticking in the canal, (Underwood.) or a small splinter of wood or fragment of straw, introduced by the child. In one case we saw it produced by a portion of thread that the child had wound around the end of the penis. It is occasionally connected with an erysipelatous affection of the integuments of the penis and scrotum, and not unfrequently we have found it accompanied with a herpetic eruption around the external skin of the prepuce at the point of duplicature. In some cases it is attended by a discharge from within the prepuce, resembling a strong lather of soap, or the froth of milk; this is evidently caused by the retention of the natural discharges of the part, rendered perhaps more copious from the irritation of the urine, which often fills the cavity of the prepuce before it is discharged externally; the discharge almost invariably disappears as soon as the tumefaction subsides.

In the treatment of this affection, if the tumefaction be not very extensive, and it presents no difficulty or impediment to the discharge of the urine, little else is required than to wash the part frequently with camphorated spirits, and an equal quantity of water, or with two parts of the aqua comphorata and vinegar, or to envelope the prepuce in crumb of bread moistened with a weak solution of the acetate of lead. In all cases it will be proper to examine the urethra, and if a stone or other foreign substance be found in the passage, to extract it. If the ædema be very extensive, and the free discharge of the urine is interfered with; the best plan is to slightly scarify the skin at the most depending portion of the tumor, and foment it

freely with tepid water.

When connected with an erysipelatous inflammation of the penis and scrotum, this should be treated by its appropriate remedies; and in cases in which a herpetic cruption is present, the application to this, night and morning, of a little of the unguentum nitratis hydrargyri, diluted with an equal quantity of fresh hog's lard, we have found

to be generally sufficient for its speedy removal.

10.-Hydrocele.

Hydrocele, in infants, may result from the distention of the vaginal sac of the scrotum with serum; the communication between this sac and the cavity of the abdomen being obliterated, or still continuing open;—or the accumulation of serum, may be confined to the vaginal tunic of the cord, without any communication with the scrotum or abdomen, or with a free communication with the latter. The diagnosis is somewhat different in these different cases. In hydrocele of the vaginal sac of the scrotum, the tumor is somewhat transparent, and the testicle, if it has descended, may be felt near its inferior posterior part. If no communication exists between the sac and abdomen, the swelling undergoes no change in its dimensions, during crying or coughing; but usually, gradually augments in size, pre-

senting a kind of pyramidal form, with the apex towards the ring; and by the integuments of the scrotum being put upon the stretch, their natural rugosity is obliterated, and they become smooth, pale coloured, and shining. When, however, a communication still exists, between the scrotal and abdominal cavities, the tumor increases in size when the child coughs or cries; and pressure upon the tumor will cause the serum by which it is distended in great part or entirely, to pass upwards into the abdomen; but it immediately returns upon the pressure being removed. In this case, our diagnosis is to be founded upon the semidiaphanous character of the swelling, the presence of fluctuation, and the inability to feel within it any fold of intestine, or portion of omen-In hydrocele of the cord, the tumor most generally occupies a situation midway between the testicle and groin; it is of an oblong figure, perfectly circumscribed, and generally very tense; -it undergoes no alteration from change of posture, or during coughing or It may be accompanied by an inguinal hernia, and by hydrocele of the scrotal sac, in which case the true character of the disease is rendered very obscure, and its existence is, with difficulty, detected. When the hydrocele is situated higher up upon the cord, it often extends upwards within the ring, or by gentle and continued pressure may be made to recede within it, but immediately returns upon the pressure being removed. With the exception of a slight dragging sensation, which is the greatest when the hydrocele is low down upon the cord or in the scrotal sac, these tumors are unaccompanied either by pain or uneasiness.

The hydrocele is very generally confined to one side; occasionally,

however, it occurs on both.

In some cases, children are born affected with hydrocele either of the scrotum or cord; most generally, however, it is not noticed until four or five days, and sometimes even longer, after birth. Children are also liable to the occurrence of hydrocele at a later period, from the same causes which produce it in the adult. Notwithstanding the alarm to which these swellings, in infants and young children, give rise in the minds of the parents and those connected with the patient, they are seldom of much importance, and often disappear, after a

time, spontaneously.

In young infants, frequently sponging the tumor with a weak solution of the acetate of lead, or with a mixture of two parts of aqua camphorata and one of vinegar is, perhaps, the only treatment that it is proper to pursue. If, under this treatment, the swelling does not disappear; when the child has arrived at twelve or eighteen months of age, as well as in those cases in which the swelling appears late in infancy, or during childhood, the effusion of cold water—the water being poured upon the hydrocele out of a tea pot, and from a height-four or five times a day, will very generally cause its dispersion. (Physick, Dewees.) The effusion must be unremittingly persevered in for a considerable time. In this manner we have, in repeated instances, effected a complete cure. The effects of the cold water may be increased, in children over two years of age, by brisk purging, and a simple farinaceous diet.

*R.—Bi-tart. potassæ, Jij.

Pulv. jalap, Jj—M. f. ch. No. xij.

One of which may be given every day, or every other day, according to the effects produced upon the bowels.

Where the hydrocele is of considerable size, and, in place of diminishing, continues steadily to increase in bulk, we have found that puncturing the tumor, and allowing the water gradually to drain off, has, after one or two repetitions, produced a radical cure; we have, also, seen the introduction through the tumor of a seton composed of a few threads of floss silk, effect a perfect cure, as well in cases of scrotal hydrocele, as of hydrocele of the cord, without the occurrence of much pain, or any disagreeable symptoms. The ends of the seton should be loosely tied together, and a thread drawn out every second or third day, until the whole is removed.

The discussion as to the particular circumstances under which it may become necessary and proper to resort to the usual surgical means for effecting a cure of hydrocele in the child, by causing the obliteration of the cavity of the tunica vaginalis does not come within the

scope of the present treatise.

11.—Fractures.

Fractures of the bones of the extremities are sometimes produced during birth, especially in cases where, from a mal-position or presentation, turning, or other manual interference, is required; we have known the fracture of the humerus repeatedly take place by improper and unskilful attempts to bring down the arm in cases of ordinary labour. In all cases in which the accident has, unfortunately, taken place, the fact should be at once explained to those who have the care of the infant, and measures immediately taken, after the child is washed, to secure the fractured extremities in apposition, by a proper bandage and splints. What we have found to answer perfectly well, even in fractures of the thigh in the newborn infant, are, narrow strips of thin pasteboard, well moistened in warm water, then neatly enveloped in soft linen, applied to the limb, after the proper adjustment of the latter, and secured in their place by a proper bandage. These splints, if made sufficiently soft, mould themselves to the shape of the limb, and when they again dry, present a sufficient resistance to the feeble action of the infant's muscles. It is necessary, however, to watch carefully the limb until the drying of the splints, lest in handling the child it be accidentally bent at the place of fracture, or the fractured extremities of the bone otherwise displaced. Fractures in infants heal rapidly and promptly, and give little inconvenience, if properly secured :- as nutrition at this period is rapid, reparation takes place also readily; a child may suffer more, and incur more danger from cutting a tooth, than a newborn infant from fracture of the femur or of the humerus. (Blundell.)

12.—Cohesion of the Labia and Nymphæ.

In female infants there is, occasionally, an adhesion of either the labia or nymphæ; but much more frequently of the latter. This cohesion may be congenital, or occur some time after birth. The cohesion of the labia, when present, is easily detected. In some cases it is so slight as to give way upon the mere separation of the labia; in others, it is produced by a very firm but delicate and transparent membrane, extending across from the inner surface of one labium to that of the other, for the division of which, the aid of the knife will become necessary; in other cases, again, the adhesion of the labia is more intimate and extensive, and requires a cautious use of the knife for its removal; finally, there may occur a complete occlusion of the external orifice of the vagina, which is usually connected with a deficiency of some one or all of the internal sexual organs. In all these cases of cohesion of the labia, excepting the last, the sooner it is removed the better; but when a complete closure of the vagina happens from a congenital and perfect fusion of the two labia, no operation should be attempted previously to puberty, unless we are able certainly to determine that the vagina or uterus is not wanting, inasmuch as the child would otherwise be subjected to a severe and fruitless operation. By waiting, however, until the period of puberty, we shall then be able to decide with tolerable certainty, as to the existence or non-existence of the internal organs, and, consequently, as to the propriety or non-necessity of an operation.

Adhesion of the nymphæ is much more common than cohesion of the labia, and requires for its detection, a much closer inspection. (Blundell.) When the nymphæ cohere, upon the separation of the labia, they are extended in such a manner as to form a flat, continuous covering to the orifice of the vagina, and by the blood being pressed out of their tissues when they are thus put upon the stretch, they become pale, and scarcely to be distinguished from the surrounding surface; hence, at first view, it appears as though the nymphæ were wanting, and there existed no vagina; but by gradually approximating the labia, the nymphæ assume their usual form and situation; a probe may also be passed behind them and the entrance to the vagina, and if the cohesion was not congential, we may learn from the nurse, that the opening into the vagina was the same, at

Cohesion of the nymphæ, the same as of the labia, may often be destroyed by the mere separation of the labia, or a probe being passed behind the coherent nymphæ, and made to bear upon the line of juncture, this may often be gently torn asunder, by merely drawing the instrument towards us; in some cases, however, the adhesion is so intimate and firm as to require the aid of the knife. Care must always be taken by the interposition of a portion of soft linen, mois-

tened with sweet oil, or fresh lard, to prevent the divided surfaces from again adhering.

first, as it is in other infants.

Simple cohesions of the nymphæ should be remedied at an early period. The longer they are left, the more difficult, in general, does their removal become.

13.—Burns and Scalds.

Burns and scalds are among the most frequent accidents that occur during the latter period of infancy, and during childhood. The carelessness of parents and servants, the natural temerity and incantiousness of children, and the necessity, in the ordinary mode of warming our apartments, of children being brought in close proximity to the open fire, or heated stoves, render these accidents of such frequent occurrence, that no winter passes without our seeing a number of children who have suffered from them. They occasionally happen under circumstances where they were the least to be anticipated: infants being left for a few moments alone, have crawled or climbed to parts of the room where vessels of heated water were standing, which they have overturned upon themselves:—some of the most serious scalds in children that we have have been called upon to treat,

have been produced in this manner.

There is a very great variety in the character and extent of these accidents, which requires some modification in their treatment. The burn or scald may produce a simple and very circumscribed inflammation of the skin; or an inflammation accompanied with vesication; or the cuticle may be completely removed to some extent; or the whole of the integuments of a part may be entirely destroyed. The pain and suffering are always greater in superficial burns than in those attended with an entire destruction of the cuticle. Burns which involved a very large portion of the surface, would appear to be attended with no pain whatever; -the patient, if old enough, complains of a feeling of chilliness or cold, and is strongly inclined to sleep. There is, in all extensive burns, immediately upon their occurrence, a very great depression of the whole of the vital powers, which continues for some time before reaction takes place; while, in other cases, no reaction whatever occurs; the patient falls into a deep comatose sleep, from which he never awakes. The danger from burns is always in proportion to their extent, taken in connection with their depth; -but even superficial burns, seated on certain portions of the body, are attended with very great, and sometimes immediate danger. Thus a burn, of even small extent, upon the head or stomach, has been known to produce very speedy death. (Physick.)

In superficial burns, in which there is produced a simple redness of the skin, the best immediate applications are, cold water, vinegar, or any alcoholic liquor. The application of these fluids must be unremittingly persevered in; they always relieve the intense smarting with which these burns are attended; and often very speedily allay the inflammation When nothing else is at hand, the common potatoc,

scraped or mashed into a pulp, without its being boiled, will often be found beneficial. After the cold application has been continued for some time, the injured part may be lightly covered or wrapped with loose cotton. This has always a soothing effect. If any considerable degree of inflammation still continue, we have found the best application to be a liniment composed of fresh lard and acetate of lead. After all, however, even in the most superficial burns, our own experience would lead us to recommend, in all cases, the immediate application of the spirits of turpentine;—it removes, at once, the smarting pain, prevents vesication, and we have often been surprized at the rapidity with which, under its use, the inflammation entirely subsides. To derive, however, these advantages from the turpentine, it must be applied without the least delay. In extensive burns, it ought, invariably, to be preferred to every other local application.

aR.—Axung. 3j. Acetat. plumbi. 9j.—M.

When vesication is produced by the burn or scald, the same treatment should be pursued. If the vesicles are large, it is better to puncture them, to allow of the escape of the serum, but without

removing any portion of the cuticle.

In burns attended with extensive vesication, in general, suppuration, with a copious discharge of matter ensues. If the suppurating surface continues red and inflamed, the common bread-and-milk poultice, with a proper attention to the state of the bowels, and, if the child is weaned, a light farinacious diet, will be proper, until the inflammation subsides, when, as well as in cases in which the ulceration of the skin is unattended with any considerable degree of inflammation, the parts may be dressed with the ceratum oxyd. zinci, or the simple cerate, intimately combined with a portion of prepared chalk.

In deep burns, attended with a destruction of the integuments, warm emollient poultices should be applied until the inflammation of the surrounding skin, is entirely removed, when, the burnt part should be covered with a pledget of lint, thickly spread with the common resinous ointment, mixed with an equal portion of spirits of turpentine; which dressing should be continued until the dead portions of integument slough out. We have found, in deep burns, attended with considerable inflammation of the surrounding parts, the usual domestic application, of common lamp oil and molasses, spread on cotton, to be often a very useful one. When the dead parts are entirely separated, a simple bread-and-milk poultice should be applied, until granulations begin to form, when the ulcer may be dressed with the ointment of the oxyde of zinc; and if cicatrization is long in taking place, adhesive strips should be applied, and the part subjected to the pressure of an appropriate bandage.

In all burns situated near joints, or in the neighbourhood of parts possessing a good deal of motion, care should be taken during the process of

healing, to prevent, as much as possible, by the use of splints and bandages, any deformity, from the contraction of the first, or the drawing of the latter out of their proper place; for one of the peculiarities of the cicatrices of burns is, the formation of firm, elevated ridges, by the gradual contraction of which, the utmost deformity, or even the entire loss of the use of a limb may be occasioned. Even by the best devised means, it will often be impossible, in extensive burns, to prevent this occurring to a certain degree; nevertheless, the extent of the deformity may be greatly diminished by proper care and attention. When the burn is seated upon the hand or foot, or in the vicinity of the ear, caution must also be observed to prevent the unnatural adhesion of the fingers to each other, or of the ear to the side of the head.

During the healing of extensive burns, a rapid formation of fungous granulations very commonly takes place; nor is it possible entirely to restrain them by the application of pressure, caustic or other escharotics. The first, however, we have found, in general, the most successful; it may be applied, by covering the ulcer with a pledgit of dry lint, and then enveloping it with a bandage; in some cases, the adhesive strips and bandage, will answer very well. If an escharotic is used, the best will be, perhaps, the nitrate of silver; we must confess, however, that we have seldom seen much good result from its

application.

As we have already remarked, in all extensive burns or scalds, there is a very great depression of the vital energies; the patient complains of a feeling of chilliness, and is usually inclined to sleep; we have seen a child, immediately after being scalded, shiver as though he were exposed to a very considerable degree of cold. In such cases, a dose of the camphorated tineture of opium, adapted to the age of the patient, will be proper; or if the depression is very great, a few drops of Hoffman's anodyne and spirits of camphor, combined, may be given, and the child should be placed in a room of a moderately warm temperature. The moment that reaction takes place, every thing whether in the form of food, drinks or medicine, of a stimulating character, should be withheld. In some cases, a restricted diet, purgatives, and even bleeding, will be required, in consequence of the extent of the local inflammation, and the degree of febrile reaction with which it is attended.

INDEX.

Black pock, 444.

Acne, 596. Adipous tissue, induration of the, 515. Affective faculties, state of in infancy, 80. Air, importance of pure, 20. 577. eold and damp, injurious effects of, 22. 556. overheated, injurious effects of, 23. impure and stagnant, productive of discase, 96. 555. Alopecia, 523. Amusements for children, 55. Aneurism by anastamosis, 550. Anger, bad effects of when excited in children, 61. Angina externa, 170. polyposa or membranacea, 294. Anginose scarlatina, 416. Ani, prolapsus, 224. Anuria, 606. Anus, imperforate, 191. Apoplexy, 341. Aptha lactumina, 126. Apthæ, 130. Arachnoid cavity, hæmorrhage of the, 343. Asphyxia, 262. Asthma, thymie, 311. Atmosphere, impure, injurious effects of, 20. cold and damp, injurious effects of, overheated, injurious effects of, 23. Atelectasis pulmonum, 289. Atonic ulcer, 524. Atrophia ablactatorium, 201.

A.

Β.

Baldness, 523,
Bathing, importance of, 24.577.
Beds, proper for infants and children,
-47.
Bilious diarrhea, 203—210.

Bladder, urinary, state of, in infancy, 70. Blood, state of, in infancy and childhood, 71. . Blue disease, 534. Bones, state of, in infancy and childhood, 61.81. indications of disease from state of, serophulous disease of the, 565. 587. Bowels, indications of disease from the discharges from the, 118. Brain, organization of in infancy and childhood, 71-82. its liability to disease in infants, 90. deaths from diseases of the, 91. hypertrophy of the, 336. hyperæmia of the, 343. hæmorrhage of the, 343. inflammation of the, 367-379. dropsy of the, 379. tubercles of the, 572. Breasts, intumescence and inflammation of the, 634. Breath, indications of disease frem the state of the, 117. Bronchial congestion, 278. Bronchii, inflammation of the, 271. congestion of the, 278. Bronchitis, 271. vesicular, 286. deaths from, in children, 89. Bullæ febrilis, 527. Burns and scalds, 642.

C.

Calorification, state of, in infancy, 76.
Cancrum oris, 139.
Capillary system, state of, in infancy, 71.
75.

Carrying infants, eaution to be observed in, | Dandriff, 520. 50. Debility, deaths of children from, 86. Carriages for infants, 50. Dentition, 80. Cattarrhal fever, 273. as a cause of disease, 100. Cellular tissue, induration of the, 513. difficult, 149. Cerebral hyperæmia and hæmorrhage, 341. diarrhœa from, 202-209. Chicken pox, 475. entaneous eruptions during, 478. Cholera infantum, 217. Diabetis, 615. deaths from, 90. mellitis, 616. Chorea, 395. Diagnosis of disease in infancy, 101. Chylous diarrhæa, 204. Diarrhæa, 198. Circulatory organs, state of, in infancy, 71. deaths from in children, 90. Cleanliness, importance of, 24. bilious, 203-210. neglect of, a cause of disease, 556. ehylous, 204. Clothing of children, 27, 28. 578. ehronie, 213. mucous, 202-207. Club-foot, 623. Cold, its injurious effects on infants, 22. from cold, 202. and dampness a cause of disease, 97. dentition, 202-209. errors in diet, 200-205. diarrhea from, 202. execssive heat, 203. Colic, 193. Diet of infants and children, 30-39. 178. Colitis, 245. a wet nurse, 36. Colon, inflammation of the, 245. diarrhœa from errors in, 200-205. Confinement of children, injurious effects scrophula from improper, 554. of, 53. 557. Digestive organs, condition of in infancy and ehildhood, 69. 76. 82. Confined air, a cause of disease, 96. Congenital affections, 619. diseases of the, 125. Congestion of the brain, deaths from, 91. deaths from affections of the, 90. bronchial, 278. Diptheretic inflammation of the throat, 157. Congestive scarlatina, 426. Discharges from stomach and bowels, indica-Conjunctivitis, infantile, 594. tions of disease from, 111. Consumption in children, deaths from, 92. Disease, causes of in infancy and childhood, Contagion, susceptibility of infants to, 100. Convulsions, 352. Diseased persons, impropriety of children deaths from, 91. sleeping with, 47. Dropsy of the brain, 379. nine day, 358. Coryza, 268. deaths from, 91. Couch, sleeping, proper for young children Dry scall, 504. 44 - 47Dysentery, 245. Countenance, indications of disease from state deaths from, 90. Dysuria, COL. of, 104. Cradles, the use and abuse of, 45. Croup, 294. E. spasmodic, 311. deaths from, 89. 294. Ear, inflammation of the, 562, 585. Crusta lactea, 481. Crusted tetter, 483. Ecchymoses, 529. Crying in infants, causes and morbid effects, Ecthyma, 524. Eczema, 486. Cry, indications of disease from the nature lactea, 481. of the, 110. Education, too early attempts at mental, iniproper, 54. 63. Curd-like exudation, stomatitis with, 126. Cutaneous disease, frequency of in infancy, Effusion of serum or lymph, common in inflammations of children, &7. 87. eruptions, 478. Emotions of the mind, influence of, on Cyanosis, 534. nurse's milk, 176. Cynanche trachealis, 294. Enteralgia, 193. Enteritis, 240. Enurisis, 610. D. Eruptions, cutancous, 478. Damp and cold, injurious effects of in infansyphilitie, 541.

from gastro-enteric irritation, 485.

cy, 23. 97. 556.

Eruptions during lactation and dentition, 478. | Gastro-malacia, 179. with languid cutaneous action, 520. from infection, independent of viseeral disease, 538.

frequency of in infancy, 87.

Eruptive fevers, 404. Erysipelas, 490. Erythema, 485.

Erythematic stomatitis, 125.

Example, its powerful influence on children,

Exanthemata, 404.

Exanthematous opthalmia, 562.

Exercise, its importance during childhood, 49.52.63.

precautions in regard to, 56. defective, a cause of disease, 558. External senses, state of during infancy and

ehildhood, 72. 83. Eye, inflammation of the, 559. 581. 594.

F.

Fatigue, a cause of disease in children, 556. Fauces, diptheritic inflammation of the, 157. Favus, 508. Fear, injurious effects of in children, 59.

Felon, 545. Fever, the remittent or gastrie of infancy, 252.

eatarrhal, 273. eruptive, 404. scarlet, 414. pemphigoid, 527.

Flannel, importance of in the clothing of Heart, state of in infancy, 71. ehildren, 28.

Follicular stomatitis, 130.

tumors, 506. wart, 506.

Food of infancy and childhood, 30. 39. as a eause of disease, 96. 554. of the nurse, influence of on her milk,

Foreign bodies in the larynx and trachea,

Fractures, 640.

Fruits, the use of by elildren, 42. Functions, state of the, during infancy and

ehildhood, 66. 74. 82.

G.

Ganglionic system, state of, during infancy,

Gangranopsis, 139.

Gangrene of the mouth, 139.

throat, 161.

Gastro-enteric disease, cruptions connected Icterus infantalis, 517.

with, 485. liability of infants to, 89, 252. in serophulous subjects, 579.

Gastric fever of infancy, 252.

Gelutinous softening of the stomach, 179. 187.

Genital organs, state of, in infancy, 73.

Gengivitis, 138.

Gestures, indications of disease from the, 107. Girls, exercise of, 53.

Glands, lymphatic, serophulous disease of, 558.580. mesenteric, serophulous disease of,

564.

Glottis, spasm of the, 311.

Gravedo, 268. Gravel, 603.

Gum, the red, 478.

white, 479.

Gums, inflamination of the, 138.

H.

Hamorrhage, eerebral, 341-343.

vaginal, 632. from the navel, 636.

Hamorrhagic purpura, 531. Hair, management of, in infancy and child-

hood, 27. Hare-lip, 625.

Harsh treatment of children, morbid effects of, 58.

Heart, malformations of, in infants, 535. Heat, excessive, morbid effects of, 23. 98. diarrhœa from, 203. 210.

Head, covering proper for, in infants, 23.

Hernia, 626. Herpes, 500.

Hip-disease, 568. 590. Honeycomb scall, 508.

Hooping-cough, 318. deaths from, 89.

Hordcolum, 499. Hamid tetter, 483. Hygienic management of children, 19.

Hydrencephaloid disease, 393. Hydrocele, 638.

Hydrocephalus, 379. ehronic, 393. Hydro-rachis, 619.

Hyperamia, frequency of in infancy, 86.

of the brain, 341. Hypertrophy, of the brain, 336.

Hyperarisis, 615.

I.

Ichthyosis, 522. Ileitus, 240.

Impetigo, 483

larvalis vel mucosa, 431.

Impure air, morbid effects of in infancy, 20.	Leuce 503
96.	Lippitudo, 500.
Indigestion, 174.	Liver, state of in infancy, 70.
Induration, of the skin, 513.	Lobar pneumonia, 284.
Indurcissement du tissue cellulaire, 513.	Lobular pneumonia, 282.
Inflammation of the brain, 367. 379.	Lungs, state of during infancy, 70.
deaths from, 91.	inflammation of the, 281.
bronehii, 271.	imperfect dilatation of the, 289.
colon, 245.	Tumb officien of services in discourse of
	Lymph, effusion of, common in diseases of
digestive organs, deaths from, 90.	infancy, 87.
fauces, 157.	Lymphatic glands, scrophulous disease of,
ear, 562. 585.	558. 580.
eye, 559. 581.	system, its liability to disease in in-
gums, 138.	faney, 91.
intestines, 240. 245.	
lungs, 281.	M.
mammæ, in infants, 634.	191.
mouth, 125.	77 7 1 1 1 710
nares, 268.	Macula hepatica, 518.
	Malformations of the intestines, 190.
navel, 632.	Mamma, intumescence and inflammation of
œsophagus, 172.	the, 634.
pleura, 290.	Marasmus, deaths from, 90.
parotids, 168.	Meusles, 404.
peritoneum, 248.	false, 406.
stomach, 184.	deaths from, 88.
tonsils, 155.	
throat, 157.	Medulla spinalis, state of during infancy, 72.
	Melas, 503.
trachea, 294.	Melasma, 518.
Intellectual faculties, state of during infan-	Meningitis, acute, 367.
ey and childhood, 79, 80. 83.	sub acute, 379.
Intestines, state of in infancy, 69.	tubercular, 379.
diseases of the, 190.	Menstruation, its influence on the milk,
congenital malformations of the, 190.	176.
deaths from disease of, 90.	Mesenteric glands, scrophulous disease of the,
inflammation of the, 240.245.	
invagination of the, 227.	564.
worms in the, 229.	Mellituria, 616.
	Micturition, difficult, 601.
Intumescence of the breasts in infants,	Milk, influence of menstruction on the, 176.
634.	pregnancy on the, 177.
Intus-susception, 227.	emotions of the mind on the, 177.181.
Invagination of the intestines, 227.	of food on the, 176.
deaths from, 90.	Millar's asthma, 311.
Ischuria, 608.	Modified small-pox, 472.
Itch, 538.	Months, mortality of children during the dif-
	ferent, 99.
77	
к.	Moral treatment of children, 57.
	faculties, state of in children, 79.
Kanker of the mouth, 139.	Morbilli, 404.
	Morbus cœruleanus, 534.
L.	eoxarius, 568. 590.
	Mortality of children in Philadelphia, 86.
Labia, adhesion of the, 641.	Mouth, indications of disease from the state
Land, adhesion of the, orantions during	of the, 113.
Lactation, eutaneous eruptions during,	diseases of the, 125.
478.	inflammation of the, 125.
injury from protracted, 177.	
Larynx, state of during infancy, 70.	sore, of children, 126.
foreign bodies in the, 333.	gangrene of the, 139.
Laryngeo-tracheitis, 294.	kanker of the, 139.
Larungismus stridulous, 311.	Mucous diarrhea, 202. 207.
Laudanum, dangers attending its adminis-	
tration in infancy, 63. 183.	Mumps, 169.
	Muscles, state of in infancy, 68. 82.
Lepra, 503, 504.	

Muscles, morbid contraction of the, 366.

N.

Nævus, 548.

Narcotics, dangers from the use of, in in- Petechia, 529. fancy, 63. 283.

Nares, inflammation of the, 268.

Nuvel, inflammation and ulceration of the,

hæmorrhage from the, 636. Nerves, organic, state of in infancy, 72.

Nervous system, diseases of the, 336. Nettle rash, 487.

New-born infants, washing of, 24.

Night-dress of infants, 29. Nine-day convulsions, 358.

Nursery, proper location of the, 20.

Nurse, choice of a wet, 35. dict of a 36. " drink of a 37.

residence of a " 37. Natritive functions, disease of the, 552.

0.

Obstinacy in children, its management, 60.

Œdema cellularis, 513.

of the prepuce, 637.

Œsophagitis, 172.

Œsophagus, inflammation of the, 172.

Old persons, danger of children sleeping with, 47.

Onychia, 545.

maligna, 546.

Opiates, dangers attending their use in infancy, 63. 183.

Opthalmia, scrophulous, 559. 581.

purulent, 594.

Organization, state of during infancy and childhood, 66. SI.

Organic disease, discolouration of the skin from, 531.

Organic nerves, state of during infancy,

Organs, their development during infancy, 73.

Otitis, 562. 585.

P.

Panaritium, 545. Paralysis, 343. Paronychia, 515. Parotitis, 168. Parotids, inflammation of the, 168. Pathology of infancy and childhood, 85. Peevishness, its causes and treatment in Rupia, 524. infants, 15. 57.

Pemphygus, 527.

Pemphigoid fever, 527. Peritonitis, 248.

chronic, 249.

Peritoneum, inflammation of the, 248. Pertussis, 318.

Petechial small-pox, 444. Phlegmonous tumors, 495.

Phlegmone parotidea, 170. Pityriasis, 520.

Pleura, inflammation of the, 290.

Pleuritis, 290. Pneumonia, 281

lobular, 282. lobar, 284. vesicular, 286.

deaths from in children, 89.

Polypus of the rectum, 227. Pompholyx, 527.

Porrigo, 481, 508.

Porriginous opthalmia, 562.

Pregnancy, influence of on the milk, 177.

Prepuce, edcma of the, 637.

Prickly heat, 486. Prolapsus ani, 224.

Pseudo-membranous inflammation of the

throat, 157. Psora, 538.

Psoriasis, 504.

Pulmonary cells, obliteration of the, 289.

Pulse, state of in infancy, 75.

Purpura, 529.

hæmorrhagica, 531. febrilis, 532.

R.

Rachitis, 566.587.

Rash, the searlet, 436. Rectum, polypus of the, 227.

Red gum, 479.

Relation, functions of, condition of during infancy, 77.

Remittent fever of infants, 252.

Respiratory organs, state of during infancy, 70.

discases of the, 262.

function, state of during infancy, 75.

mucous membrane, its liability to

disease in infants, 8.

Respiration, indication of disease from the state of, 112.

Revaccination, results of, 464.

Rickets, 566. 587.

Ring worm, 501.

Roseola, 436.

Rubeola, 404. Rubeolous fever, 407.

Ruptures, 626.

S. Salaam convulsions, 365. Scabies, 508. 538. Scalds, burns and, 642. Scall, 483. 508. Scarlatina, 414. inflammatory, 415. anginosa, 416. congestive, 426. deaths from, 88. Scarlet fever, 414. rash, 436. Scrophula, 552. 574. Scrophulous opthalmia, 559. 581. disease of lymphatic glands, 558.580. otitis, 562. discharge from the vagina, 564. disease of the mesenteric glands, 564. bones, 565. 587. Seasons, influence of the, upon the health and mortality of infants, 98. Semiology of disease in infancy, 101. Senses, external, state of in infancy and childhood, 72.83. Serous effusion, common in diseases of children, 87. Sickly persons, danger of children sleeping with, 47. Skin, its liability to disease in infancy, diseases of the, 404. induration of the, 513. bound, 513. Sleep of infants, 43. indications of disease from the phenomena of, 109. Small-pox, 438. distinct, 440. confluent, 441. congestive, 442. 444. malignant, 444. modified, 472. mitigated, 472. deaths from, 88. 449. Snuffles, 268. Softening of the stomach, 179. 187. Sore mouth of children, 126. Spasmodic colic, 194. croup, 311. Spasm of the glottis, 311. Spina bifida, 619. Spine, disease of the, 670. 591. Still-born infants, treatment of, 262. number of in Philadelphia, 263. Stomach, state of during infancy, 69.

discase, 118.

diseases of the, 174.

softening of the, 179. 187.

deaths from, 90.

inflammation of the, 184.

Stomatitis, simple erythematic, 125. with curd-like exudation, 126. Stools, indications of disease from the appearance of the, 118. Stridulous laryngismus, 311. Strophulus, 478. Stye, 499. Sugar, the use of, by children, 42. Summer complaint of infants, 217. Surface, indications of disease from state of, 114. Swine-pox, 475. Sycosis, 507. Syphilitic eruptions, 541. Tabes mesenterica, 242. 255. 564. 586. Talipes, 623. Teething, 80. 100. 149. 202. 209. 478. deaths from, 90. Temperature proper for infants, 20. 22. Temperaments, 84. Testicle, arrest of the, 631. Tetter, crusted, 483. humid, 483. scally, 504. Thorax, its form in infancy, 70. Throat, diseases of the, 155. gangrene of the, 161. inflammation of the, 157. diptheritic inflammation of, 157. Thrush, 126. Thymic asthma, 311. Tinea, muciflua, 481. capitis, 508. ciliaris, 500. Tongue, indications of disease from state of, 113. Tongue-tie, 154. Tonsillitis, 155. Tonsils, inflammation of the, 155. Trachea, foreign bodies in the, 333. inflammation of the, 294. Tracheotomy in croup, its results, 309. Tubercles, liability of children to, 92. of the brain, 572. Tubercular meningitis, 379. depositions, 571. 593. Tumors, phlegmonous, 495.

U.

follicular, 506.

Ulcer, atonic, 524. Ulceration of the navel, 632. discharges from, as indications of Ulcerative stomatitis, 136. Urinary organs, diseased conditions of in children, 93. diseases of the, 601. discharge, indications of discase from state of, 120.

Urinary bladder, state of in infancy, 70.
Urine, suppression of the, 606.
retention of the, 608.
incontinence of the, 610.
Urticaria, 487.

V.

Vaccination, 458.

phenomena of, 466.
period for, 468.
mode of, 469.

Vagina, scrophulous discharges from, 564.
556.
hæmorrhage from, 632.

Varicella, 475.

Variola, 438.
distinet, 440.
confluent, 441.
eongestive, 442, 444.

malignant, 444.

nigra, 4:14.

Varioloid, 472.
Vertebræ, disease of the, 570.
Vesicular pneumonia, 286.
Vomiting, indications of disease from discharges by, 118.
of infants at the breast, 174.

W.

Walk, precautions in teaching children to, 51.

Wart, follicular, 506.

Washing infants, mode of, 24.

Water kanker, 139.

Weaning, proper period for, 35.

Wet.narse, on the choice of a, 35.

White gum, 479.

swelling, 567. 589.

Whitlow, 545.

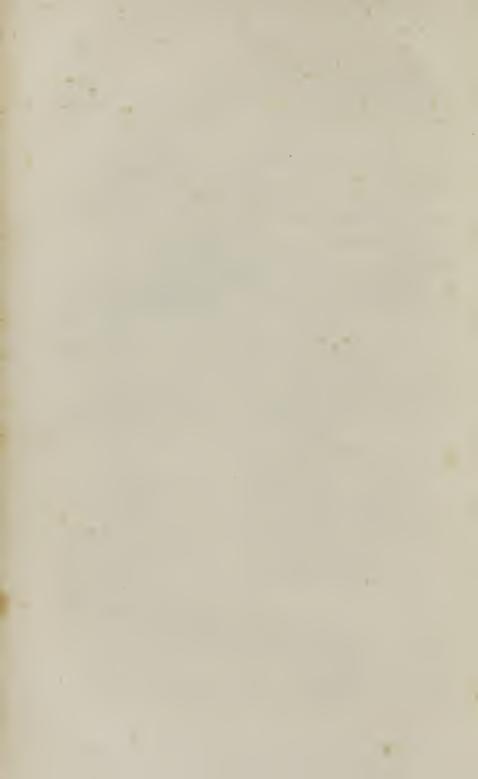
Worm fever, 240.

Worms, intestinal, 229.

as a cause of disease, 99. 257.

diarrhea from, 209.

deaths from, 90.



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CONTENTS OF, AND CONTRIBUTORS TO,

THE CYCLOPÆDIA OF PRACTICAL MEDICINE.

	D 337
Abdomen, Exploration of, Dr. Forbes.	Counter Irritation Dr. WILLIAMS.
Abortion Dr. LEE.	Croup Dr. CHEYNE.
Abortion Dr. Lee.	Cyanosis Dr. CRAMPTON.
	D . C
Abstinence Dr. M. HALL.	
Achor Dr. Todd.	
Acne Dr. Todd.	Delirium Tremens Dr. CARTER.
Acupuncture Dr. Elliotson.	Dentition, Disorders of . Dr. Joy.
D. Dearm	Derivation Dr. STOKES.
	Determination of Blood Dr. BARLOW.
All, Change on	
Alteratives Dr. CONOLLY.	Diaphoretics Dr. A. T. THOMSON.
	Diarrhœa Dr. FORBES
Amenorrhœa Dr. Locock.	Diarrica Dr. Forbes.
D. M HATT	Dietetics Dr. PARIS.
Anathia Di. III. IIA	Dilatation of the Heart . Dr. HOPE.
	Dilatation of the areas
Angina Pectoris Dr. Forbes.	Discuse
Anodynes Dr. WHITING.	Distillection
Anthelmintics Dr. A. T. THOMSON.	Diuretics Dr. A. T. Thomson.
Antiphlogistic Regimen Dr. BARLOW.	Dropsy Dr. DARWALL.
Tritte British and Market Mark	Dysentery Dr. Brown.
Antispasmodics Dr. A. T. Thomson.	Dysmenorrhæa Dr. Locock.
Aorta, Aneurism of, Dr. Hope.	
Aphonia Dr. Kobertson.	
Anhthæ Dr. Robertson.	
Apoplexy, Cerebral. Dr. CLUTTERBUCK.	Dysuria Dr. Cumin.
Aphthæ Dr. Robertson. Apoplexy, Cerebral, Dr. Cluttereuck. Apoplexy, Pulmonary, Dr. Townsend.	Ecthyma Dr. 1000.
Apopiexy, ruimonary, . Dr. Hono	Eczema Dr. Joy.
Arteritis Dr. HOPE.	Education, Physical, . Dr. Barlow.
Artisans, Diseases of, . Dr. DARWALL.	Education, 2 hydroday
Ascites Dr. DARWALL.	Elephantiasis Arabum . Dr. Apjohn. Dr. Scott.
Asphyxia Dr. Roget.	Elephantiasis Arabum . Dr. Scott.
D D	Elephantiasis Græcorum Dr. Joy.
	Elephantiasis Græcorum Emetics Dr. A. T. Thomson. Emmenagogues Dr. A. T. Thomson.
Astringents Dr. A. T. THOMSON.	Emmenagogues Dr. A. T. Thomson.
Atrophy Dr. Townsend.	Dr Townsenb.
Astringents Dr. A. T. Thomson. Atrophy Dr. Townsend. Auscultation Dr. Forbes.	Emphysema of the Lungs Dr. Townsend. Emphysema Dr. Townsend. Emphysema Dr. Townsend. Dr. Townsend.
Barbiers Dr. Scott.	Emphysema of the Lungs Dr. Townsens
D T	Empyema Dr. Townsend.
D 0	Dalamia Digonogo Hr. HANCOCK.
Beriberi Dr. Scott.	Enteritis Dr. STOKES.
Blood, Morbid States of, Dr. M. Hall. Bloodletting Dr. M. Hall.	Enteritis Dr. Stokes. Ephelis Dr. Todd. Enidemics Dr. Hancock.
Bloodletting Dr. M. HALL.	Epidemics Dr. HANCOCK.
CDr. Quain.	Epidemics Dr. Chryne
Brain, Inflammation of, Dr. ADAIR CRAWFORD.	Epidemies Dr. Cheyne. Enistaxis Dr. Kerr.
	Epistaxis Dr. KERR.
210110111111	Erethismus Mercurialis Dr. BURDER.
Bronchocele Dr. AND. CRAWFORD.	Ervsipelas Dr. Tweedie.
Bullæ Dr. Todd.	Erysipelas Dr. I WEEDIE.
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Bullæ Dr. Todd. Calculus Dr. Thos. Thomson. Calculous Diseases . Dr. Cumin. Catalepsy Dr. Jov. Catarrh Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, . Dr. Forbes. Chicker Pox Dr. Gregory.	Erysipelas . Dr. Iweedie. Erythema . Dr. Jov. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Forress. Dr. Marshall. Erver General Doctrine of, Dr. Tweedie.
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Bullæ . Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy . Dr. Joy. Catarrh . Dr. Williams. Cathartics . Dr. A. T. Thomson. Chest, Exploration of, Chicken Pox . Dr. Gregory. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Forbes. Dr. Forbes. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. "Continued, and its Modifications, Modifications, Treedies.
Bullæ	Erysipelas . Dr. I WEEDEE Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Dr. Forress. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedee. "Continued, and its Modifications, "Typhus . Dr. Tweedee. "Typhus . Dr. Tweedee.
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Bullæ . Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy . Dr. Jov. Catarrh . Dr. Williams. Cathartics . Dr. A. T. Thomson. Chest, Exploration of, Chicken Pox . Dr. Gregory. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown. Chorea . Dr. Clark. Cold . Dr. Whiting. Colica Pistonum . Dr. Tweedie. Colica Pistonum . Dr. Whiting. Calcaling Pistonum . Dr. Whiting. Col. Dr. Weiting. Dr. Colica Pistonum . Dr. Whiting.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Dr. Forbes. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. "Continued, and its Modifications, "Typhus . Dr. Tweedie. "Typhus . Dr. Tweedie. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Infantile Remittent Dr. Joy. "Typhus . Dr. Brown.
Bullœ Dr. Todd. Calculus Dr. Thos. Thomson. Calculus Dr. Thos. Thomson. Catalepsy Dr. Joy. Catarrh Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chicken Pox Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Colic Dr. Whiting. Colica Pictonum Dr. And Crawford. Col. Dr. Whiting. Colica Pictonum Dr. Whiting. Col. Dr. Whiting.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. From Dr. A. T. Thomson. Dr. Scott. Dr. A. T. Thomson. Dr. Scott. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. "Continued, and its Modifications," "Typhus . Dr. Tweedie. "Epidemic Gastric . Dr. Chenne. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Infantile Remittent Dr. Joy. "Hectic . Dr. Lee.
Bullæ . Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy . Dr. Jov. Catarrh . Dr. Williams. Cathartics . Dr. A. T. Thomson. Chest, Exploration of, Chicken Pox . Dr. Gregory. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown. Chorea . Dr. Cark. Cold . Dr. Whiting. Colic . Colica Pictonum . Dr. Whiting. Coma . Dr. Walliams. Cold . Dr. Whiting. Colma . Dr. Adair Crawford.	Erysipelas
Bullœ Dr. Todd. Calculus Dr. Thos. Thomson. Calculus Dr. Thos. Thomson. Calculus Dr. Dr. Jov. Catalepsy Dr. Jov. Catarri Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chicken Pox Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. Add. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Colic Dr. Whiting. Coma Dr. Apjo Dr. Apide. Coma Dr. Apjo Dr. Apide. Coma Crawford. Combustion, Spontane- Combustion, Spontane- Catalegy.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. Freigned Diseases . Dr. Forbes. Feigned Diseases . Dr. Tweedie. 'Continued, and its Modifications, 'Typhus . Dr. Tweedie. 'Epidemic Gastric . Dr. Erowen. 'Infantile Remittent . Dr. Brown. 'Infantile Remittent . Dr. Brown. 'Hectic . Dr. Lee. 'Yellow . Dr. Gillkrest.
Bulle Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy Dr. Joy. Catarrh Dr. Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Chark. Cold Dr. Whiting. Colic Dr. Whiting. Coma Dr. Adair Crawford. Combustion, Spontane- ous Human,	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. Dr. A. T. Thomson. Dr. Scott. Dr. Forbes. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. "Continued, and its Dr. Tweedie. "Modifications, "Typhus . Dr. Tweedie. Dr. Tweedie. Dr. Tweedie. Dr. Chevne. Dr. Brown. Tinfantile Remittent Dr. Brown. "Hectic . Dr. Brown. "Puerperal . Dr. Lee. "Yellow . Dr. Gillerest. Fungus Hematodes . Dr. Kerr.
Bullee Dr. Todd. Calculus Dr. Thos. Thomson. Calculus Dr. Thos. Thomson. Calculus Dr. Dr. Dr. Cumin. Catalepsy Dr. Joy. Catarri Dr. Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chicken Pox Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Coma Dr. Adair Crawford. Coma Dr. Adair Crawford. Combustion, Spontane- ous Human, Control Plood Dr. Barlow.	Erysipelas
Bulle Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy Dr. Joy. Catarrh Dr. Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Coma Dr. Whiting. Combustion, Spontane- ous Human, Congestion of Blood Cor. Hastings.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. WILSON. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Feer, General Doctrine of, Dr. Tweedie. "Continued, and its Modifications, "Typhus . Dr. Tweedie. "Epidemic Gastric Dr. Tweedie. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Remittent . Dr. Brown. "Hectic . Dr. Brown. "Puerperal . Dr. Lee. "Yellow . Dr. GILLKREST. Fungus Hæmatodes . Dr. Kerr. Galvanism . Dr. Apohn.
Bullæ	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. WILSON. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Feigned Diseases . Dr. Tweedie. "Continued, and its Modifications . Dr. Tweedie. "Continued and its Modifications . Dr. Tweedie. "Epidemic Gastric Dr. Tweedie. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Remittent . Dr. Brown. "Hectic . Dr. Brown. "Puerperal . Dr. Lee. "Yellow . Dr. GILLEREST. Fungus Hematodes . Dr. Kerr. Galvanism . Dr. Stockes. Dr. Papidn. Gastritis . Dr. Brown. Tr. Apjohn. Gastritis . Dr. Brown. Tr. Apjohn. Dr. Stort. Dr. Apjohn. Dr. Storkes. Dr. Papidn.
Bullæ . Dr. Todd. Calculus Diseases Dr. Cumin. Catalepsy . Dr. Joy. Catarrh . Dr. Williams. Cathartics . Dr. A. T. Thomson. Chest, Exploration of, Dr. Gregory. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown. Chorea . Dr. And. Crawford. Climate . Dr. Clark. Cold . Dr. Whiting. Colic . Dr. Whiting. Coma . Dr. Adair Crawford. Congestion of Blood Constipation . Dr. Barlow. Dr. Barlow. Dr. Astrings. Dr. Streefen.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. From Dr. A. T. Thomson. Dr. Scott. Dr. A. T. Thomson. Dr. Scott. Dr. Forbes. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. Modifications, Modifications, Epidemic Gastric Intermittent . Dr. Brown. Infantile Remittent Dr. Brown. Infantile Remittent Dr. Joy. Hectic . Dr. Rewn. Hectic . Dr. Brown. Hectic . Dr. Brown. Fungus Hematodes . Dr. Kerr. Galvanism . Dr. Apjohn. Gastritis . Dr. Stokes. Gastrodynia . Dr. Stokes. Control Fungus Dr. Stokes.
Bullæ . Dr. Todd. Calculus Diseases . Dr. Cumin. Catalepsy . Dr. Joy. Catarrh . Dr. Williams. Cathartics . Dr. A. T. Thomson. Chest, Exploration of, Chicken Pox . Dr. Gregory. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown. Chorea . Dr. And. Crawford. Climate . Dr. Clark. Cold . Dr. Whiting. Colic . Dr. Whiting. Colica Pictonum . Dr. Whiting. Combustion, Spontane- ous Human, . Congestion of Blood Constipation . Dr. Spreeten. Dr. Barlow. Contagion . Dr. Streeten. Dr. Brown. Craft Dr. Contagion . Dr. Tutespie.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. WILSON. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Feigned Diseases . Dr. Tweedie. "Continued, and its Modifications . Dr. Tweedie. "Continued, and its Modifications . Dr. Tweedie. "Typhus . Dr. Tweedie. "Epidemic Gastric Dr. Tweedie. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Remittent . Dr. Brown. "Hectic . Dr. Lee. "Yellow . Dr. GILLEREST. Fungus Hæmatodes . Dr. Kerr. Galvanism . Dr. Apjohn. Gastritis . Dr. Stokes. Dr. Brokes.
Bullœ Dr. Todd. Calculus Diseases Dr. Thos. Thomson. Catalepsy Dr. Joy. Catarrin Dr. Joy. Catarrin Dr. Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Colic Dr. Whiting. Coma Dr. Adair Crawford. Coma Dr. Apair Crawford. Comsus Human, Congestion of Blood Constipation Dr. Streeten. Contagion Dr. Streeten. Convalescence Dr. Adams Crawford. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Tweedie. Dr. Apair Crawford. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Tweedie.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. WILSON. Favus . Dr. A. T. Thomson. Feigned Diseases . Dr. Scott. Feigned Diseases . Dr. Tweedie. "Continued, and its Modifications . Dr. Tweedie. "Continued, and its Modifications . Dr. Tweedie. "Typhus . Dr. Tweedie. "Epidemic Gastric Dr. Tweedie. "Intermittent . Dr. Brown. "Remittent . Dr. Brown. "Remittent . Dr. Brown. "Hectic . Dr. Lee. "Yellow . Dr. GILLEREST. Fungus Hæmatodes . Dr. Kerr. Galvanism . Dr. Apjohn. Gastritis . Dr. Stokes. Dr. Brokes.
Bullœ Dr. Todd. Calculus Diseases Dr. Thos. Thomson. Catalepsy Dr. Joy. Catarrin Dr. Joy. Catarrin Dr. Dr. Williams. Cathartics Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Colic Dr. Whiting. Coma Dr. Adair Crawford. Coma Dr. Apair Crawford. Comsus Human, Congestion of Blood Constipation Dr. Streeten. Contagion Dr. Streeten. Convalescence Dr. Adams Crawford. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Tweedie. Dr. Apair Crawford. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Streeten. Dr. Tweedie.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. From Joy. Feigned Diseases . Dr. Scott. Dr. Forbres. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. Wodifications, Typhus . Dr. Tweedie. Dr. Tweedie. Dr. Cheyne. Intermittent . Dr. Brown. Hectic . Dr. Brown. Fungus Heematodes . Dr. Kerr. Galvanism . Dr. Afjohn. Gastritis . Dr. Barlow. Gastrodynia . Dr. Barlow. Gastrodynia . Dr. Barlow. Gastrodynia . Dr. Browes. Glossitis . Dr. Stokes. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Dr. Joy.
Bullœ Dr. Todd. Calculus Diseases Dr. Thos. Thomson. Catalepsy Dr. Joy. Catarrin Dr. Joy. Catarrin Dr. A. T. Thomson. Chest, Exploration of, Chicken Pox Dr. Gregory. Chlorosis Dr. M. Hall. Cholera Dr. Brown. Chorea Dr. And. Crawford. Climate Dr. Clark. Cold Dr. Whiting. Colic Dr. Whiting. Colic Dr. Whiting. Coma Dr. And Crawford. Coma Dr. And Crawford. Coma Dr. Whiting. Dr. Whiting. Dr. Whiting. Dr. Tweedis. Dr. Adair Crawford. Constipation Dr. Adair Crawford. Contagion Dr. Streeten. Convulsions Dr. Adair Crawford. Dr. Streeten. Dr. Adair Crawford. Dr. Streeten. Dr. Adair Crawford. Dr. Tweedis. Dr. Streeten. Dr. Adair Crawford. Dr. Adair Crawford. Dr. Tweedis. Dr. Adair Crawford.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. From Dr. A. T. Thomson. Dr. Scott. Dr. A. T. Thomson. Dr. Scott. Dr. Forbes. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. Modifications, Modifications, Epidemic Gastric Intermittent . Dr. Brown. Infantile Remittent Dr. Brown. Infantile Remittent Dr. Joy. Hectic . Dr. Rewn. Hectic . Dr. Brown. Hectic . Dr. Lee. Yellow Dr. Lee. Tyellow Dr. Kerr. Gastritis . Dr. Stokes. Gastro-Enteritis . Dr. Stokes. Gastro-Enteritis . Dr. Stokes. Glossitis . Dr. Kerr. Glossitis . Dr. Lee. Gout . Dr. Stokes. Dr.
Bullœ . Dr. Todd. Calculus Diseases . Dr. Cumin. Catalepsy . Dr. Joy. Catarri . Dr. Williams. Catarri . Dr. A. T. Thomson. Chest, Exploration of, Dr. Forbes. Chlorosis . Dr. M. Hall. Cholera . Dr. Brown. Chorea . Dr. Abd. Crawford. Climate . Dr. Clark. Cold . Dr. Whiting. Colic . Dr. Whiting. Coma . Dr. Abd. Crawford. Coma . Dr. Whiting. Coma . Dr. Abd. Crawford. Comsufuman, . Dr. Abd. Crawford. Constipation . Dr. Abd. Crawford. Dr. Apjohn. Dr. Barlow. Dr. Hastings. Contagion . Dr. Brown. Dr. Tweedie. Dr. Streefen. Dr. Streefen. Dr. Reddie.	Erysipelas . Dr. Iweedie. Erythema . Dr. Joy. Expectorants . Dr. A. T. Thomson. Expectoration . Dr. Wilson. Favus . Dr. A. T. Thomson. Favus . Dr. A. T. Thomson. From Joy. Feigned Diseases . Dr. Scott. Dr. Forbres. Dr. Marshall. Fever, General Doctrine of, Dr. Tweedie. Wodifications, Typhus . Dr. Tweedie. Dr. Tweedie. Dr. Cheyne. Intermittent . Dr. Brown. Hectic . Dr. Brown. Fungus Heematodes . Dr. Kerr. Galvanism . Dr. Afjohn. Gastritis . Dr. Barlow. Gastrodynia . Dr. Barlow. Gastrodynia . Dr. Barlow. Gastrodynia . Dr. Browes. Glossitis . Dr. Stokes. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Glossitis . Dr. Kerr. Dr. Joy.

CONTENTS, &c., OF THE CYCLOPÆDIA OF PRACTICAL MEDICINE.

	- N
Headach Dr. BURDER.	Pityriasis Dr. Cumin.
Heart, Diseases of the. Dr. Hope.	Plague Dr. Brown.
" Highlacoment of the Dr Townson	Fleihora Dr. Darlow
Hematemesis Dr. Goldie.	Pleurisy, Pleuritis, Dr. LAW.
Hemoptysis Dr. LAW.	Plica Polonica Dr. Corrigan.
Hematemesis Dr. Goldis, Hemoprysis Dr. Law. Hemorrhage Dr. Watson. Hereditary Transmission of Disease . Dr. Brown.	Pneumonia Dr. WILLIAMS.
Hereditary Transmis- C D. Bassey	Pneumothorax Dr. Houghton.
sion of Disease . Dr. BROWN.	Porrigo Dr. A. T. Thomson.
	Pregnancy, &c., Signs of, Dr. Montgomery.
Hiccup Dr. Astt.	Prognosis Dr. Ash.
Hooping-Cough Dr. Johnson,	Pscudo-morbid Appear- Sp. p. p. p. p.
Hiccup Dr. Ash. Hooping-Cough Dr. Johnson, Hydatids Dr. Kerr, Hydrocephalus Dr. Joy.	ances Dr. R. B. Tobb.
Hydrocephalus Dr. Joy.	Psoriasis Dr. Cumin.
Hydropericardium Dr. DARWALL.	Puerperal Diseases Dr. Hall.
Hydrophobia Dr. BARDSLEY.	Pulse Dr. Bostock.
Hydrothorax Dr. DAEWALL.	Purigo Dr. A. T. Thomson.
Hydrothorax Dr. DARWALL. Hypertrophy Dr. TOWNSEND.	Purpura Dr. Goldie.
Hypertrophy of the Heart Dr. Hope.	Pyrosis Dr. Kerr.
Hypochondriasis Dr. PRITCHARD.	Rape Dr. BEATTY.
Hysteria Dr. Conolly.	Refrigerants Dr. A. T. Thomson.
Icthyosis Dr. A. T. Thomson.	
Identity Dr. Montgomery.	Rickets Dr. Cumin.
Impetigo Dr. A. T. Thomson. Impotence Dr. Beatty.	Roseola Dr. Tweedle.
Impotence Dr. BEATTY.	Rubeola Dr. Montgomery.
Incontinence of Urine . Dr. Cumin.	Rupia Dr. Corrigan. Rupture of the Heart . Dr. Townshend.
Incubus Dr. Williams. Indigestion Dr. Todd.	Rupture of the Heart . Dr. Townshend.
Indigestion Dr. Todd.	Scabies Dr. Houghton.
Induration Dr. CARSWELL.	Scarlatina Dr. Tweedie.
Infanticide Dr. Arrowsmith.	Scirrhus Dr. CARSWELL.
Infection Dr. Brown.	Scorbiitus Dr. KERR.
Inflammation Dr. A. CRAWFORD, Dr. TWEEDIE. Influenza Dr. HANCOCK.	Scrofula Dr. Cumin.
Influenza Dr. HANCOCK.	Sedatives Dr. A. T. THOMSON
Insanity Dr. Pritchard.	Sex, Doubtful, Dr. Beatty.
Irritation Dr. WILLIAMS.	Small-Pox Dr. GREGORY.
Ischuria Renalis Dr. CARTER.	Softening of Organs Dr Canaupra
Jaundice Dr. Burder.	Somnambulism and Ani-
Jaundice Dr. BURDER. Kidneys, Diseases of, . Dr. CARTER.	mal Magnetism . Dr. PRITCHARD.
Lactation Dr. Locock. Laryngitis Dr. Cheyne. Latent Diseases Dr. Christison.	Soundance for of Wind Dr Parmouran
Laryngitis Dr. CHEYNE.	Spinal Marrow, Dis- C
Latent Diseases Dr. Christisov	eases of, Dr. Bigsby.
Lepra Dr. Houghton. Leucorrhœa Dr. Locock. Lichen Dr. Houghton. Liver, Inflammation of,	Spleen, Discases of, Dr. Bigsby.
Leucorrhea Dr. Locock	Statistics, Medical, Dr. HAWKINS.
Lichen Dr Houghton	Stethoscope Dr. WILLIAMS.
Liver Inflammation of Dr Stores	
"Diseases of Dr VENADIES	Stomach, Organic Dis- Spr. Houghton.
Malaria and Miasma Dr RROWN	cases of, Dr. Houghton.
	C T 1 . C
Medicine, Principles and Dr. CONOLLY.	ance-Legitimacy, Dr. Montgomer.
Practice of Br. Conolly.	Suppuration Dr. R. B. Topp.
Molana De Corne	Survivorship Dr. Beatty.
Melanosis Dr. Goldie. Melanosis Dr. Carswell. Menorrhagia Dr. Locock.	Sycosis Dr. Cumin.
Monorphogia D. Lasser	Sycosis Dr. Cumin. Symtomatology Dr. M. Hall.
Monotonagia Dr. Locock.	
Menstruation, Pathology of Dr. Locock.	Syncope Dr. Ash.
Marification Dr. I WEEDIE.	Tabes Mesenterica Dr. Joy.
Northcation Dr. CARSWELL.	Temperament Dr. PRITCHARI
Miliaria, Dr. TWEEDIE. Mortification Dr. CARSWELL. Narcotics Dr. A.T. THOMSON. Nephralgia and Nephritis Dr. Carter.	Tetanus Dr. Symonds.
Nephraigia and Nephritis Dr. CARTER.	Throat, Diseases of the, Dr. Tweedle.
Neuralgia Dr. Elliotson.	Tonics Dr. A. T. Tho.
Noli me tangere, or Lupus Dr. Houghton.	Toxicology Dr. APJOHN.
Nyctalopia Dr. GRANT.	Transformations Dr. Duesbury
Obesity Dr. WILLIAMS.	Transfusion Dr. KAY.
Œdema Dr. DARWALL.	Tubercle Dr. CARSWELL
Nyctalopia Dr. Grant. Obesity Dr. Williams. Œdema Dr. Darwall. Ophthalmia Dr. Jacob. Otalgia and Otitis . Dr. Burne.	Tubercular Phthisis Dr. CLARK.
Otalgia and Otitis Dr. BURNE.	Tympanites Dr. Kerr.
Ovaria, Diseases of the Dr. 11EE.	Urine, Morbid States of, Dr. Bostock.
Palpitation Dr. Hope.	Urine, Bloody, Dr. Goldie.
Pancreas, Discases of the, Dr. CARTER.	Urticaria Dr. Houghta
Paralysis Dr. R. B. Topp.	Uterus, &c. Pathology of, Dr. Lee.
Parotitis Dr. KERR.	Vaccination Dr. GREGORY
Pellagra Dr. KERR.	Varicella Dr. Gregory.
Pemphigua De Connigue	Veins, Diseases of, Dr. Lee.
Perforation of the Hol- Dr. CARSWELL.	Ventilation Dr. Brown.
low Viscera & Dr. CARSWELL.	Wakefulness Dr. Cheyne.
Pericarditis and Carditis Dr. HOPE.	Waters, Mineral, Dr. T. THOM? R.
Peritonitis Dr. M'ADAM, Dr. STOKES.	Worms Dr. Joy.
Persons found Dead . Dr. BEATTY.	Wounds, Death from, . Dr. BEATTY.
Phlegmasia Dolens Dr. LEE.	Yaws Dr. KERR.

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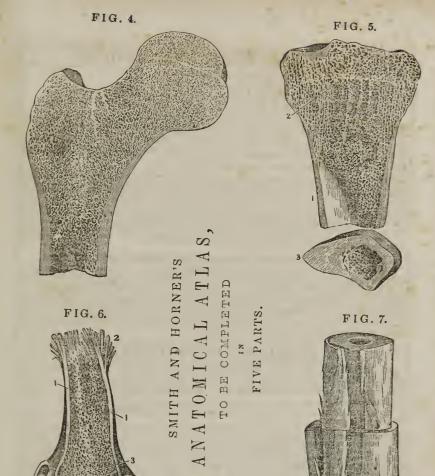
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#### FIG. 4.

A LONGITUDINAL SECTION OF A FEMUR, SHOWING THE CELLULAR STRUCTURE AT ITS EXTREMITY.

#### FIG. 5.

- A LONGITUDINAL SECTION OF A TIBIA, SHOWING
- 1. The Compact Structure.
- 2. The Cellular Structure.
- 3. A Transverse section of the Femur, showing its Compact Substance, its Internal Cellular Structure, and the Medullary Canal.

#### FIG. 6.

THE TEXTURE OF A BONE AS SHOWN IN A HUMERUS, AFTER MACERATION IN DILUTE ACID.

- 1. 1. The Compact Matter as usually seen.
- 2. 2. The same split, so as to show the Longitudinal Fibres composing it.
- 3. The Internal Cellular Matter.
- 4. The Bone seen under its Articular Cartilage.

#### FIG. 7.

A VIEW OF THE CONCENTRIC LAMELLE OF THE COMPACT MATTER OF A BONE.

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